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Argument Quality and Strength in Health and Risk Messaging

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Summary and Keywords

In an ideal world, people would adopt a positive attitude toward a healthy lifestyle as a result of carefully considering relevant and strong arguments. Attitudes based upon such considerations are believed to be stable and good predictors of related behavior, and less vulnerable to counterattitudinal messages. However, carefully evaluating arguments in such messages is difficult. First, people need to identify what information can serve as an argument and construe the argumentative relation between the information and the advocated claim. Next, they need to assess the extent to which the argument satisfies the criteria for a strong argument. What these criteria are depends on the type of argument at hand: an argument from analogy, for instance, should be evaluated with different criteria than an argument from authority. Argument scrutiny thus entails reconstruction, identification, and evaluation.

The good news is that even though argument scrutiny is a complex task, it seems that people are pretty well equipped to carry it out. Meta-analyses have shown that messages containing strong arguments are more persuasive than those containing weak arguments. In addition, there is evidence that people are sensitive to what extent a specific argument satisfies relevant criteria when evaluating arguments. The bad news is that people may use these skills not so much to make objective evaluations to reach a better decision, but rather to defend the type of behavior that they already *feel* they want to perform. That is, they use their argument evaluation skills to reason why the arguments in support of the behavior that they favor are stronger than the arguments against that behavior.

Keywords: argument quality, argument type, argument scheme, argument criteria, convincing arguments

Argument Quality

Argument quality can play a pivotal role in obtaining stable, healthy lifestyle changes. According to dual-process models of the persuasion process, such as the elaboration likelihood model (ELM: Petty & Cacioppo, 1986; Petty, Rucker, Bizer, & Cacioppo, 2004) and the heuristic-systematic model (HSM: Chaiken, 1987; Chen & Chaiken, 1999), argument quality will determine the outcome of the persuasion process if people are motivated and able to spend the energy to elaborate upon the argumentative content of the message. Attitudes based upon such a careful consideration of the arguments are believed to be more stable, less sensitive to counterpersuasion attempts, and, perhaps most important, better predictors of related behavior (Petty, Haugtvedt, & Smith, 1995). Meta-analyses have provided evidence for both more stable attitude-behavior relations when the attitude is based upon a careful consideration of the message's arguments (Glasman & Albarracín, 2006), and the importance of argument quality for the persuasion process's outcome (Carpenter, 2015; Park, Levine, Kingsley Westerman, Orfgen, & Foregger, 2007).

Arguments and argumentation can thus play an important role in health communication. Van Eemeren and Grootendorst (2004, p. 1) defined argumentation as "a verbal, social, and rational activity aimed at convincing a reasonable critic of the acceptability of a standpoint by putting forward a constellation of propositions justifying or refuting the proposition expressed in the standpoint." Based on this definition, it follows that an argument is a proposition or assertion that is employed to make a claim or standpoint more acceptable. Carpenter's (2015) meta-analysis suggests that high-quality arguments are better at this than low-quality arguments but leaves the question unaddressed as to what characteristics distinguish high- from low-quality arguments. Using the label "quality" implies the need of a normative perspective: high-quality arguments meet certain relevant criteria to a greater extent than low-quality ones.

Given the importance of argument quality for the direction and the stability of the persuasion process outcome, as well as the large number of studies in which argument quality has been manipulated, one would expect that the question as to what argument characteristics distinguish high-quality arguments from low-quality arguments has been addressed in a satisfactory way already. Unfortunately, that is not the case. In the next section, I will show that this lack of progress is the result of confusing two different perspectives on what argument quality entails: an empirical perspective, focusing on the question "Is this argument convincing?" and a normative one, focusing on the question "Should this argument be convincing?" Progress with respect to identifying the active ingredients of argument quality can be made only when argument quality manipulations are informed by normative criteria for argument quality.

What criteria are relevant depends on the type of argument at hand. Different argument types are distinguished, such as argument from authority and argument from analogy. To be considered a high-quality argument, the former has to satisfy other criteria than the

latter. Here, I will be discussing the most relevant argument types, as well as the major criteria for evaluating their quality. Subsequently, I will discuss research that shows to what extent people are susceptible to differences in the extent to which normative criteria are met. Finally, I will show that people's ability to distinguish high-quality arguments from low-quality ones can be a blessing, but it can also be a curse from the perspective of designing health messages. This ability enables people to reject high-quality arguments that go against their gut feeling and improve low-quality arguments in accordance with this feeling.

Empirical and Normative Approaches to Argument Quality

Fishbein and Ajzen (1981, p. 351) noted that lack of knowledge about what constitutes a strong argument is "probably the most serious problem in communication and persuasion research" and complained almost 30 years later (Fishbein & Ajzen, 2010, p. 344) that "we don't at this point have a good, validated method to assess an argument's strength or validity." Given the number of studies in which argument quality has been manipulated and its impact on the persuasive outcome has been assessed [as Carpenter (2015) reported upon examining 134 of such studies], it may seem strange that so little progress has been made on such an important issue.

An important cause for this lack of insight is that manipulations of argument quality have been informed mainly by empirical pretests instead of normative criteria. Most researchers have followed the procedure described by Petty and Cacioppo (1986). First, researchers develop a list of intuitively strong and weak arguments. Next, participants are asked to rate the strength of the individual arguments. Finally, the highest- and lowest-scoring arguments are presented to a different sample of participants, who are asked to reflect upon these arguments; arguments that evoke predominantly negative responses are classified as weak arguments, and those evoking mainly positive responses as strong arguments.

Although this procedure is a fail-safe way to address the question as to whether an argument is convincing, it provides little or no guidance for health message designers in selecting strong arguments. From the results of the pretests, it is impossible to identify what aspects of the arguments are responsible for how convincing the strong arguments are. As O'Keefe (2003) has argued, manipulations guided by effect-independent criteria are needed in order for research to provide evidence-based guidelines for message designers. In such a design, differences in the arguments' convincingness can be reliably ascribed to the manipulated characteristics, enabling the identification of active ingredients of argument quality and providing guidelines for what arguments can be categorized as high quality. For such an approach to be effective, one needs a perspective to identify

what characteristics of arguments could be active ingredients. The next section will discuss three such perspectives.

Different Perspectives on Argument Quality: Evidence, Fallacies, and Argument Types

Arguments have been defined previously as assertions put forward to increase the acceptability of a claim. This definition closely resembles that of Reynolds and Reynolds (2002, p. 429), which stated that evidence is “data (facts or opinions) presented as proof for an assertion.” As is already clear from this definition, evidence comes in different types. Rieke and Sillars (1984, p. 91) referred to the opinions as testimony and further subdivided the facts class into specific instances and statistics. In quite a number of studies, the differential impact of various types of evidence has been assessed (for narrative reviews, see Reinard, 1988; Reynolds & Reynolds, 2002). In particular, the distinction between specific instances and statistics has received a lot of attention (for meta-analyses, see Allen & Preiss, 1997; Zebregs, Van den Putte, Neijens, & De Graaf, 2015).

The problem with the evidence type perspective is that the criteria that a type of evidence should satisfy depends on the argumentation context in which it is used. Take, for instance, the case of a 53-year-old woman who contracted Lyme disease as a result of being bitten by a tick when working in her garden. This specific instance can serve as evidence for the claim that her neighbor, who is also an avid gardener, runs the risk of contracting Lyme disease in this way as well. The extent to which this case provides high-quality evidence depends on the similarity between this woman’s gardening routines and those of her neighbor’s. From an argument type perspective, the woman’s case serves as evidence in an argument from analogy. However, the exact same case could also serve as evidence in support of the more general claim that gardening puts people in danger of contracting Lyme disease. In such a context, it is the number of specific instances, as well as the typicality of these cases, that are at stake, because now the evidence serves within the context of an argument from example. In general, the argument type perspective is more relevant for identifying the criteria that must be satisfied than the evidence type perspective.

A second popular approach to argument quality is focusing on fallacies or fallacious arguments—that is, those arguments that are “psychologically persuasive but logically incorrect; that do as a matter of fact persuade but, given certain argumentative standards, shouldn’t” (Copi & Burgess-Jackson, 1996, p. 97). Assessing under what conditions and to what extent people accept claims supported by fallacious arguments, such as argument ad hominem, argument from ignorance, and slippery-slope argument, provides insight into people’s susceptibility to argument quality. The study of fallacies has attracted a lot of attention in recent years. Van Eemeren, Garssen, and Meuffels (2009) conducted a large number of studies in which they showed that high school pupils are pretty good at detecting fallacious moves in discussions. These moves are considered as less reasonable than their normatively sound counterparts. Similar conclusions have been

reached in research that takes a Bayesian approach to fallacies (see, e.g., Corner, Hahn, & Oaksford, 2011; Hahn & Oaksford, 2006, 2007; for a review, see Hahn & Oaksford, 2012).

Although the study of fallacious arguments is interesting from the perspective of argument quality, it has less to offer for the selection of high-quality arguments in health communication interventions. Rather than knowing which fallacious arguments could be convincing, message designers need to know what arguments withstand close scrutiny from the target audience. Such arguments are more likely to yield strong and stable changes in attitudes and intentions.

The approach taken in this chapter is to focus on different argument types or different argument schemes. Walton, Reed, and Macagno (2008, p. 1) defined argument schemes as “forms of argument (structures of inference) that represent structures of common types of arguments used in everyday discourse.” These schemes enable identifying and describing arguments as they are used in the real world, while focusing on the underlying structure through which claim and evidence are related. When discussing the specific instance evidence given previously, two such schemes were already introduced: argument from analogy and argument from example.

The argument scheme literature is not restricted to description; it also provides criteria to assess the quality of the argument at hand. That is, for argument from analogy, the similarity between the case in the evidence and the case in the claim is of paramount importance, whereas the number of cases and their typicality are relevant criteria when considering the quality of an argument from example. Given this combination of focusing on naturally occurring arguments and providing criteria for assessing their quality, this approach is taken to provide more insight into what should be convincing arguments and to what extent they actually are. The next section will discuss the type of arguments that are frequently used in health communication.

Prominent Argument Types in Health Communication

Health communication typically aims to change people’s behavior by pointing out the negative consequences of the unhealthy lifestyle or actions and the positive consequences of the advocated behavior. That is, health interventions point out the risks of smoking (e.g., lung cancer) and the benefits of exercising (e.g., losing weight). From an argument typological point of view, these arguments are classified as “arguments from consequence.” Walton (1996, p. 75) defines “arguments from consequences” as “a species of practical reasoning where a contemplated policy or course of action is positively supported by citing the good consequences of it. In the negative form, a contemplated action is rejected on the grounds that it will have bad consequences.” This type of

argument is used frequently in practice (Schellens & de Jong, 2004), but also in research on the persuasion process (O'Keefe, 2013).

Apart from its widespread use, there is a strong consensus on what makes an argument from consequences be high quality. Schellens and De Jong (2004, p. 317) proposed the following two evaluation questions:

- How desirable or undesirable are the consequences presented as pros or cons of the behavior being advocated?
- How likely is it that the consequences mentioned will occur?

These questions pertain to the most basic criteria for evaluating a single argument from consequence. For instance, when evaluating the argument in which the claim about the desirability of exercising more is backed up by reference to the consequences of losing weight, its quality depends on (a) the desirability of losing weight and (b) the likelihood that weight loss will result from exercising. These criteria are generally accepted within argumentation theory (see, e.g., Feteris, 2002; Walton, 1996), but also by scholars interested in persuasion. Petty and Wegener (1991, p. 149), for instance, considered an argument as strong if the consequence it refers to is considered “both *desirable* and *highly likely to occur*.” In a similar fashion, Ajzen and Fishbein (1980) claimed that people’s evaluation of a behavior as wise or foolish will depend on their beliefs about what consequences are likely to occur as a result of performing the behavior and how these consequences are to be valued.

In the example given here, argument from consequences was used to support the claim that the advocated behavior (i.e., exercising) is desirable by referring to the desirability of the behavior’s consequences. The argument also can be used to support the claim that someone’s current behavior is undesirable by referring to its undesirable consequences. For instance, for years and years, people have been advised to stop smoking by referring to the negative consequences this may have, such as bad breath and lung cancer. Regardless of this difference in focus, the same criteria apply: The quality of an argument against performing a certain behavior depends on the extent to which it refers to an undesirable consequence and the extent to which this consequence is likely to occur, the only difference being the valence of the consequence in question.

A message designer may expect that the target audience will not readily accept that a certain consequence is desirable (or undesirable), doubts that the consequence is likely to occur as a result of the behavior, or both. For instance, people may doubt the desirability of losing weight, or the likelihood of contracting a sexually transmitted disease (STD) because of having unsafe sex. In those cases, the two main parts of the argument from consequences become claims themselves. “Losing weight is desirable” and “Having unsafe sex can get you an STD,” that are in need argumentative support themselves. The type of arguments that can be used to support these claims depends on the claim needing support: the one about the consequence’s desirability or the one about its probability.

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These two claims are of a very different nature. Claims about the likelihood of a consequence predict relations between actions and results in the real world; their validity can be assessed, at least in the future, by comparing them to the state of affairs in the real world. That is, the claim that exercising will help one lose weight or that smoking will cause lung cancer are predictions about a future state of affairs and can be assessed, in time, against that state of affairs. Since these claims describe state of affairs, Schellens and De Jong (2004, p. 298) referred to them as descriptive claims, to distinguish them from claims about the desirability of the consequence, which they call normative claims. The validity of normative claims cannot be assessed by comparing to real-world states; whether one considers weight loss desirable may differ from person to person depending on, for instance, their aesthetic values. Given the different criteria against which these claims are to be assessed, they need (partly) different types of argument to support them.

There are different classifications of how many and what types of argument need to be distinguished. The number ranges from 3 (Van Eemeren & Grootendorst, 2004) to over 60 (Walton et al., 2008). Given the goal of this chapter, I will use the classification scheme developed by Schellens and De Jong (2004) because the number of argument types that they distinguish is limited (7), the types they distinguish are recognized in other classifications as well, and this classification has proved detailed enough to analyze the arguments used in actual persuasive documents (see, e.g., Hornikx, Hoeken, & Starren, 2003; Schellens & De Jong, 2004). According to Schellens and De Jong, some arguments can be used only to support normative claims, others only to support descriptive claims, and a third group can be used to support both. Table 1 displays the different types of argument and what types of claim they can support.

Table 1. Argument Types Distinguished by Schellens and De Jong (2004) as a Function of the Type of Claims That They Can Support.

Normative Only	Descriptive Only	Descriptive and Normative
Argument from consequences	Argument from cause to effect	Argument from authority
Argument from rules	Argument from effect to cause	Argument from analogy
		Argument from example

Argument from consequences can (and does) resurface when the desirability or undesirability of a certain consequence is called into question. When someone questions the necessity to protect one's children against the sun in summer since "what harm can a little sunburn do?," one can refer to the fact that sunburn in childhood can develop into skin cancer at a later age. The questioned undesirability of sunburn in childhood is then

supported by referring to undesirable consequence that may occur at a later date. The argument from rules can be used to support the desirability of a consequence if there are certain agreed-upon rules that distinguish a desirable state of affairs from an undesirable one. Argument from rules is not highly relevant to health communication. The desirability or undesirability of a consequence in health communication is ultimately derived from its consequences for one's health. Given that most people consider their health to be of utmost importance, there is no need to use an argument from rules to underscore that any consequence that is beneficial to one's health should be considered desirable.

Argument from cause to effect and argument from effect to cause are both causal types of arguments. In an argument from cause to effect, a certain consequence is *predicted* to occur as a result of certain action or cause. In health communication, for instance, this type of argument is used to specify the causal steps between smoking and getting lung cancer, or between a certain eating pattern and coronary disease. In an argument from effect to cause, an effect that has already occurred is explained by referring to a certain cause that is held responsible for its occurrence. To explain why so many people have heart problems, the argument specifies that this is the result of too much fat in the diet and too little exercise. In health communication, the argument from cause to effect is of utmost importance. When aiming to convince the target audience both of the undesirable consequence of their current behavior and the desirable consequences of the advocated behavior, argument from cause to effect comes into play.

The remaining three argument types can be used to support claims about both the desirability and likelihood of a certain consequence. For instance, examples can be provided to show that a certain action indeed has had the predicted consequence (argument from example), or one can present a highly similar case for which the action had the predicted consequence (argument from analogy). Examples also can be used to specify undesirable consequences, for instance by referring to the side effects of certain sleeping pills as being addictive and reducing one's sex drive. One can use an analogous case in which the consequence was considered undesirable to support the claim that the consequence under debate is undesirable as well, but also to argue that what has occurred in this case is likely to occur in another, highly similar case as well. Finally, argument from authority can be used by including a source claiming that the consequence is likely to occur or is undesirable. In the next section, I will discuss both the normative criteria developed for these argument types and the relevant empirical work on people's sensitivity to arguments that satisfy these criteria.

Argument Types: Criteria and Convincingness

Of the seven argument types distinguished by Schellens and De Jong (2004), five are of particular interest to health communication: argument from consequences, argument from cause to effect, argument from authority, argument from analogy, and argument from example. This section will first provide a more thorough description of what these arguments entail, proceed with the normative criteria that have been proposed for such arguments to meet in order to be assessed as being high quality, and discuss empirical work that has been conducted on the extent to which meeting these criteria leads to a more convincing argument.

Argument from Consequences

Argument from consequences is the most frequently used type of argument in persuasive communications (see, e.g., Hornikx et al., 2003; Schellens & De Jong, 2004). That is not surprising, as this argument comes naturally to mind when debating questions about how to act. The desirability of a behavioral alternative is derived from the desirability of the consequences following from taking that course of action. As already discussed in this article, the simplest form of this type of argument is referring to a single desirable consequence resulting from the advocated behavior (or to a single undesirable consequence resulting from the behavior advised against). However, behavioral alternatives typically come with a number of consequences: Quitting smoking has implications for the chances of contracting lung cancer, but also for having better breath and spending less money. To complicate things even further, there can be undesirable consequences as well: one may gain weight or feel stressed as a result of abandoning cigarettes.

Health communication typically focuses on presenting one behavioral alternative as more desirable than another one. Each alternative usually has a range of consequences, some of which are desirable while others are undesirable. People have to weigh for each behavioral alternative the net “desirability” result of the various consequences associated with that alternative, and choose the alternative with the highest desirability net score. For a weighed assessment of each alternative’s assessment, both the probability of the consequence’s occurrence and the consequence’s desirability are vital. From a normative perspective, highly desirable consequences that are highly unlikely to occur should carry less weight in the equation than less desirable consequence with a much higher chance of occurring. In summary, pragmatic argumentation in health communication aims to make a certain behavioral alternative more desirable by presenting propositions about the extent to which the weighted combination of its likely behavioral alternatives yields a desirability that exceeds that of other behavioral alternatives.

According to many argumentation theory scholars, people should be sensitive to the extent to which the consequence referred to in an argument from consequences is desirable and likely to occur (see, e.g., Freeley & Steinberg, 2000, pp. 63–64; Hollihan & Baaske, 1994, pp. 64–66; Reinard, 1991, pp. 89–90; Schellens, 1985, p. 174). People apply these criteria, at least somewhat, when evaluating arguments from consequences. O’Keefe (2013) shows that people are particularly susceptible to differences in the desirability of the consequences referred to in these arguments. He discusses that a broad range of phenomena that are typically considered as unrelated can all be positioned under the umbrella of argument from consequences. For instance, research showing that people who are concerned with how they are perceived by others are typically more sensitive to advertising appeals that claim that the product will improve one’s image than are people who are less concerned by how they are perceived by others. Similarly, people more sensitive to short-term consequences have been shown to be more susceptible to arguments referring to short-term desirable consequences, even if the advocated behavior would have undesirable consequences in the long run; the opposite pattern of results was found for those people who value long-term consequences over short-term ones. A third example discussed by O’Keefe is that people living in an individualistic culture are more susceptible to advertisements appealing to important individualistic values than to those appealing to collectivistic values, whereas the opposite is found for people living in collectivistic cultures.

O’Keefe (2013) argues that these interactions between a specific personality characteristic and a specific consequence all represent people’s sensitivity to the desirability criterion of the argument from consequences. His reasoning is as follows: All other things being equal, an argument referring to a more desirable consequence should be considered as being higher quality than an argument referring to a less desirable consequence. However, this desirability may depend on individual preferences: People concerned with how they are perceived by others may consider a boost for one’s image as more desirable than people who are less concerned about their image; people with a short-term perspective may consider short-term desirable consequences more convincing than those who take the long view; and people who have grown up in an individualistic culture may consider an appeal to individualistic values more convincing than those who have grown up in a collectivistic culture. These results thus show that people are well versed in applying the “Is the consequence desirable?” criterion.

More direct evidence for people’s employment of this criterion can be found in a study by Hoeken, Timmers, and Schellens (2012). They presented participants with claims about the desirability of a certain measure or situation by referring to the desirable consequences that were likely to follow from this measure or situation. Both the desirability and likelihood of occurrence of the consequences referred to were systematically manipulated. They found that claim acceptance dropped considerably when the argument referred to a less desirable consequence. All in all, there appears to be convincing

evidence for people's use of the "Is the consequence desirable?" criterion when evaluating argument from consequences.

However, evidence for people's deployment of the "Is the consequence likely to occur?" criterion is much harder to find. Whereas Hoeken et al. (2012) found evidence for the desirability criterion, claim acceptance did not change as a result of the consequence's occurrence being more or less likely. Van Enschot-Van Dijk, Hustinx, and Hoeken (2003) found a similar pattern of results. In an experiment, they held the consequence's desirability constant but manipulated the likelihood of the consequence's occurrence. There were no effects of this manipulation on the participants' attitude. Hustinx, Van Enschot, and Hoeken (2007) manipulated both the desirability and likelihood of the consequence referred to in the argument, but only found a persuasive effect of the desirability manipulation on participants' attitudes; no such effect was found for the likelihood manipulation. Finally, Johnson, Smith-McLallen, Killeya, and Levin (2004) also reported effects for the manipulation of the consequence's desirability, but not for differences in likelihood. In his review, O'Keefe (2013, p. 127) noted that the research evidence on this issue "offers a much murkier picture" and that "it may be more important to emphasize the valence (desirability or undesirability) of the consequences than to emphasize their likelihood."

Finally, in health communication, behavioral alternatives typically are associated with more than one consequence, and these consequences can differ with respect to their valence. When argument from consequence is used to support claims about the desirability of a behavioral alternative, references to undesirable consequences effectively act as counterarguments against the behavioral alternative. From a normative point of view, the overall argument should become stronger if these counterarguments can be refuted. The research on two-sided messages appears to be relevant in this respect. In a two-sided message, not only arguments in support of a claim are provided, arguments against the claim are acknowledged as well. O'Keefe (1999) conducted a meta-analysis on studies that looked at the persuasiveness of two-sided messages with or without refutation of the counterarguments. He found that refuting the counterarguments yielded both higher credibility ratings of the source and a stronger impact on the participants' attitudes. Eisend (2007) reported a positive impact of such messages on the perception of the source. It thus appears that people are sensitive to this norm as well.

In summary, argument from consequences is a popular type of argument in health communication. From a normative point of view, the quality of a singular argument from consequences depends on the desirability of the consequence and the likelihood that this consequence will occur as a result of performing the behavior. Given that behaviors typically have several consequences—consequences that may differ with respect to their valence—arguments in which these counterarguments are refuted should also be considered as being of higher quality. The empirical research on these criteria reveals that there is ample evidence for people's sensitivity to the desirability criterion and the

refutation of counterarguments criterion; however, it appears that people are much less sensitive to the likelihood criterion.

Argument from Cause to Effect

Argument from cause to effect is an obvious choice when the goal is to claim that a certain behavior will have certain consequences, regardless of these consequences being desirable or undesirable. Schellens (1985) distinguishes two subtypes of argument from cause to effect. In the first, the claim that action A will result in outcome C is supported by making explicit the intervening step between action and outcome; that is, Action A will result in Outcome B, which will in turn result in Outcome C. For instance, the claim that applying sunscreen can protect you from getting skin cancer can be supported by referring to the fact that sunscreen can block or filter ultraviolet radiation, which is an important cause of skin cancer. The major criterion for this type of argument is cause sufficiency: namely, to what extent the cause is sufficient to bring about the predicted effect (in this case, the extent to which sunscreen can prevent a certain effect) (see, e.g., Freeley & Steinberg, 2000, p. 162; Reinard, 1991, p. 199; Schellens, 1985, p. 100; Walton, 1996, p. 74; Warnick & Inch, 1989, p. 109).

The second subtype distinguished by Schellens (1985) is the argument stating that, in general, actions of type A lead to consequences of type C. For instance, the claim that making cigarettes more expensive will lead to fewer people smoking can be supported by referring to the general phenomena that increasing the costs of a certain product leads to a reduction of its use. For this type of argument, the relevant criteria are the extent to which the action and the effect under consideration can be considered as typical for the more general action and effect classes referred to in the argument. So, to what extent is increasing the price of cigarettes a good example of other increases, and to what extent is buying fewer cigarettes a good example of reduced product use?

In general, people appear to prefer arguments in which the causal chain of events is spelled out, as opposed to arguments providing evidence about the covariation between the cause and the effect (see, e.g., Ahn, Kalish, Medin & Gelman, 1995; Kuhn, 1991). Slusher and Anderson (1996) also found that participants were more convinced by arguments specifying the mechanisms responsible for a certain effect than by information about the cooccurrence of causes and effects. Hoeken et al. (2014) manipulated systematically the extent to which arguments from cause to effect met these criteria. They found that claims were indeed accepted to a stronger extent when (a) the cause was considered more sufficient for the effect to occur, (b) the action under debate was considered to be more representative of the more general class in the argument, and (c) the effect under debate was considered to be more representative of the class of effects referred to in the argument.

Argument from Authority

Argument from authority can be employed to support both descriptive and normative claims. The basic form of an argument from authority is that a certain claim is acceptable because a certain source says that it is (cf. Walton, 1997). Claims about the likelihood of losing weight as a result of exercising can be ascribed to a general physician, a sports instructor, a dietician, or a person who lost weight as a result of exercising. These sources also can be used to support the claim that losing weight is desirable. In the argumentation theory literature, two main criteria are mentioned by virtually all sources—namely, expertise and impartiality (see, e.g., Diestler, 2005, pp. 174–178; Fogelin & Sinnott-Armstrong, 2005, p. 388; Govier, 2005, p. 142; Layman, 2005, p. 456; Reinard, 1991, p. 147; Schellens, 1985, pp. 186–187; Walton, 1996, pp. 62–65). To be able to apply these criteria, the sources must be identified clearly: the argument “Lab studies have revealed that ...” is hard to evaluate if it is unclear which lab is referred to. Therefore, Govier (2005, p. 143) and Walton (1996, p. 62) have added clear identification as an additional criterion. In addition, the source’s opinion should correspond to the claim at hand (see, e.g., Fogelin & Sinnott-Armstrong, 2005, p. 458; Layman, 2005, p. 458; Schellens, 1985, p. 186; Walton, 1996, pp. 62–66).

There is ample evidence that people are susceptible to these criteria for the quality of argument from authority. Wilson and Sherrell (1993) conducted a meta-analysis of persuasion studies in which source characteristics were manipulated. They report a stable effect of more expert sources being more convincing than less expert ones. However, no such effect was found for the source’s trustworthiness. In two other studies, more specific criteria were manipulated. When the source was perceived to have a vested interest in people accepting the claim, it yielded lower acceptance of both normative (Hoeken et al., 2012) and descriptive claims (Hoeken et al., 2014). For both types of claim, claim acceptance was lower when the claim at hand and the opinion asserted by the source differed (Hoeken et al., 2012, 2014).

There is mixed evidence with respect to impact of the expertise criterion. Whereas a number of studies report a positive impact of more expert sources (see, e.g., Harris, Hsu, & Madsen, 2012, Experiment 3; Heit & Rotello, 2012, Experiment 2; Hornikx & Hoeken, 2007, Experiment 2), no such effect is obtained in other studies (Hoeken et al., 2012, 2014). These mixed results may be the result of different manipulations. Source expertise has been manipulated by providing information on the percentage (35% or 65%) of valid conclusions drawn by a source (Heit & Rotello, 2012) or the proportion of successful policies proposed by him or her (Harris et al., 2012), which enables a relatively easy and objective assessment of a source’s expertise. In Hoeken et al. (2012, 2014), expertise was manipulated by ascribing a certain claim to a second-year undergraduate student or to a person who wrote a doctoral dissertation on this topic. Although that kind of manipulation is clear cut when the two sources were compared directly (as was

evidenced by highly significant manipulation checks), it may be much harder to detect when the argument is evaluated in isolation; under those conditions, people may reason that even a second-year undergraduate knows more about the issue than they do.

In summary, a high-quality argument from authority should meet the following criteria:

1. The source's opinion closely corresponds to the claim that it supports.
2. The source has relevant expertise on the issue at hand.
3. The source is trustworthy, as in not having a vested interest in people accepting the claim.

In studies on the impact of argument authority, it appears that people can and do apply these criteria when evaluating arguments from authority.

Argument from Analogy

Argument from analogy can be employed to support claims about the desirability of a certain consequence by referring to a similar consequence's desirability in a comparable situation, or to support a claim about the likelihood of a certain consequence by referring to the occurrence of a similar effect in a highly similar case. It is generally agreed upon that there are two criteria determining the quality of an argument from analogy: the presence of similarities and the absence of differences between the cases in the claim and in the argument (see, e.g., Diestler, 2005, p. 200; Fogelin & Sinnott-Amstrong, 2005 p. 265; Freeley & Steinberg, 2000 pp. 157-158; Govier, 2005, p. 374; Layman, 2005, pp. 478-479; Reinard, 1991, p. 198; Schellens, 1985, pp. 202-203; Walton, 1996, p. 79).

There is evidence of the importance of these criteria for the impact of an argument from analogy in support of normative and descriptive claims. Hoeken et al. (2012) manipulated the relevance of the similarities between the two cases being compared, as well as the presence of relevant differences between these cases. Both criteria violations resulted in decreased levels of claim acceptance, with the impact of irrelevant similarities being less than that of relevant differences. The importance of similarity when an argument from analogy is used to support descriptive claims has also received ample support. Especially in studies of inductive reasoning, the similarity between the case in the premise and that in the conclusion proved important for the acceptance of the conclusion (for reviews, see Hayes, Heit, & Swendsen, 2010; Heit, 2000). Hoeken and Hustinx (2009, Experiment 3) also manipulated the similarity between the case in the argument and the case in the conclusion and found a negative effect on claim acceptance for dissimilar cases. In summary, the most important criteria for assessing the quality of an argument from analogy (that is, the presence of relevant similarities and the absences of relevant differences) are being used by people when evaluating an argument from analogy.

Argument from Example

Argument from example is defined as the use of a single case or, more often, a number of cases to establish a conclusion (Freeley & Steinberg, 2000, p. 153). The typicality of the case for the larger class under discussion is the most widely mentioned criterion for this type of argument (see, e.g., Freeley & Steinberg, 2000, p. 155; Hayes et al., 2010, p. 279; Meany & Shuster, 2002, p. 61; Reinard, 1991, p. 196; Schellens, 1985, p. 196; Walton, 1996, p. 50; Warnick & Inch, 1989, p. 107). When claiming that sports will improve one's physical condition, sports such as football, tennis, and running will be considered more typical than others such as diving, curling, and archery. The second criterion that is often mentioned when discussing what should make an argument from example convincing concerns the number of examples: an argument containing more examples is considered as being of higher quality than an argument containing a single example (see, e.g., Freeley & Steinberg, 2000, p. 154; Meany & Shuster, 2002, p. 61; Reinard, 1991, p. 196; Warnick & Inch, 1989, p. 107).

Again, there is ample evidence for people's sensitivity to these criteria. Hoeken et al. (2014) manipulated systematically the typicality and the number of the examples used to support a claim. Typical examples yielded stronger levels of claim acceptance than less typical examples, thereby replicating results obtained by inductive reasoning (for a review, see Hayes et al., 2010). The number of examples proved was also important. If two examples were provided instead of one, claim acceptance increased. The number of cases can be considered to be a continuum, with the comparison between one and two examples to be at one end, and comparing one case to a statistical summary of a large number of cases at the other end. The latter comparison has received a lot of research attention. Several studies report a stronger claim acceptance if a claim is supported by a statistical summary of results compared to a single case (see, e.g., Hoeken & Hustinx, 2009; Hornikx & Hoeken, 2007) and a recent meta-analysis appears to confirm this result (Zebregs et al., 2015). It thus seems that for argument from example, as for the other argument types discussed, people are sensitive to violations of the criteria that have been proposed to distinguish high-quality from low-quality arguments.

Argument Criteria and Biased Evaluation

The previous discussion provides a rather optimistic picture of the role that argument quality can play in health communication. For the majority of the most frequently used types of argument, people know and apply normatively justified criteria to distinguish high-quality from low-quality arguments. From the ability perspective, there appear to be no barriers for people scrutinizing the arguments to develop well-thought, stable

attitudes that are relatively immune to counterpersuasion attempts and that are good predictors of related behavior.

However, several issues need to be taken into account. First, in many of these studies, participants were typically young and highly educated. As a result, the findings may not be representative of the broad target audience of many health interventions. Second, for those studies in which more heterogeneous participant samples were used (e.g., Hoeken & Hustinx, 2009; Hoeken et al., 2012, 2014), the effect sizes for the criteria violations were relatively small. The proportion of explained variance ranged from .02 to .17, suggesting that although meeting criteria influences claim acceptance, it does not have a huge impact. Third, in these studies, participants were presented with pairs of claims and arguments in isolation. This provides optimal conditions to observe the participants' susceptibility to argument quality, as there is no additional information that needs to be processed and that could draw their attention away from the argument.

Apart from these considerations, being able to apply normative criteria to assess the quality of an argument is a good thing only if people apply these criteria to assess an argument's quality in an objective way. Mercier and Sperber (2011, p. 76) state that "people are good at assessing arguments and are quite able to do so in an unbiased way," but also attach a precondition for such an unbiased assessment "provided they have no particular axe to grind." In the latter case, people may use their argument evaluation abilities in a more biased way, which is an important characteristic of "motivated reasoning" (Kunda, 1990; Molden & Higgins, 2005; Westen, Blagov, Harenski, & Hamann, 2006). Motivated reasoning implies the biased evaluation of arguments: arguments that support one's opinion are evaluated less critically than those that go against it.

In a number of studies, it has been shown that people are indeed biased judges of arguments when they already hold an opinion on, or have a vested interest in, the issue at hand. For instance, Klaczynski, Gordon, and Fauth (1997) studied to what extent participants employed normative criteria when evaluating arguments that went against their interests. Students read arguments in support of the claim that the teaching program that they were in provided either excellent or very meager prospects on the job market. The arguments did not satisfy certain normative criteria. For instance, the job prospects of the program claim were backed up by a single case of an alumnus who was either very successful or very unsuccessful at getting a job. Participants rated the arguments and provided explanations for their ratings. Arguments were rated as stronger if they were in support of positive prospects on the job market, but weaker if they supported negative prospects. Analyses of the explanations revealed that participants employed relevant normative criteria in their explanations. For instance, they referred to the danger of hasty generalization when the argument referred to a single case, but only if this argument was used to support the claim about the meager job prospects. In four experiments, Klaczynski et al. showed that people thought longer, deeper, and more negatively when evaluating arguments that went against their vested interests compared to those in favor of their interests.

Hoeken and Van Vugt (2016) found similar results. They told participants that they would take part in a debate and had to defend either the claim that mixed schools (that is, schools attended by children with different ethnic backgrounds) were desirable or the claim that they were undesirable. All participants received 16 arguments and were asked to prepare themselves for the debate while thinking aloud. The arguments were manipulated systematically: half of them were in support of mixed schools, and half were against mixed schools. In addition, argument quality was manipulated by having half of the arguments in support and half of the counterarguments fail to meet a relevant normative criterion.

Analysis of the think aloud protocols revealed that people almost exclusively used criteria to boost the quality of arguments supporting their claim, while disqualifying arguments that went against it. For instance, the argument that mixed schools in the Netherlands would be effective because mixed schools in Denmark had good results was qualified as strong by those who had to defend the claim that mixed schools were desirable by referring to the high similarity between the Netherlands and Denmark, whereas their opponents qualified this argument as weak because there were many differences between the Netherlands and Denmark. Both groups thus evaluated the same argument, employing the same and relevant criterion, but arrived at diametrically opposed evaluations. Apparently, people can and do use their ability to apply normative criteria for the quality of arguments to justify their current opinions and attitudes.

Susceptibility to Argument Quality: For Better or for Worse?

Argument quality is important for the formation of stable attitudes that are predictive of related behavior. For argument quality to have this effect, people need to be able to distinguish high-quality arguments from low-quality ones. In argumentation theory, criteria have been proposed to make that distinction, with different criteria for different types of argument. Research has shown that people are sensitive to differences in the extent to which an argument satisfies (or fails to satisfy) relevant criteria. Nevertheless, one should not be too optimistic about the difference that argument quality can make. First, because the persuasive impact is relatively small, and second, because people use this ability not only to objectively assess the quality of an argument, but also to dismantle high-quality arguments that go against their opinions or gut feelings while boosting the low-quality arguments that are accordance with their preferences.

Discussion of the Literature

Argumentation has been addressed from various perspectives. A highly influential approach is the pragmadialectical approach developed by Van Eemeren and Grootendorst (Van Eemeren & Grootendorst, 2004; Van Eemeren, Grootendorst, & Snoeck-Henkemans, 2002). In this approach, an ideal model of a critical discussion is developed based on insights from critical rationalism, formal dialectics, and speech act theory. It treats argumentation as an activity aiming for a reasonable resolution of a difference of opinion. To that end, it specifies the rules that participants should observe in order to reach a reasonable resolution. One of these rules, the argument scheme rule, specifies that the defense of a standpoint should take place by correctly applying an appropriate argumentation scheme.

Walton, Reed, and Macagno (2008) provided an extensive overview of the various argument schemes that can be distinguished in practice. They listed over 60 different argument schemes and provide criteria to assess the quality of such arguments. Schellens and De Jong (2004) provided a more limited list of seven argument schemes, which they used to analyze a number of public information brochures, quite a number of them on health issues. They thus provide a good framework for, as well as an illustration of, how these different argument schemes are used in real communication.

A relatively recent addition to the field is the Bayesian approach to fallacies and argument quality. At first, it was used to show how such a Bayesian approach could explain why some fallacies are indeed weak arguments, whereas other arguments with a similar structure are quite strong (Hahn & Oaksford, 2012). Now, it has been claimed that the Bayesian approach can be combined with argument scheme approaches in order to develop a more principled account of what criteria should be distinguished and how these criteria should be weighed in order to assess the argument's quality (Hahn & Hornikx, 2016).

O'Keefe (2013) provided a good review of the many disguises the argument from consequences can take, as well as what aspects of this popular argument people are sensitive to. Govier (2014) is a good and readable introduction for both the evaluation and production of arguments in practical contexts. As such, it provides a good manual for health intervention designers looking for high-quality arguments. Finally, research is developing on how to identify convincing arguments. Zhao, Strasser, Cappella, Lerman, and Fishbein (2011) have developed and validated a measurement scale to assess how specific arguments are perceived by members of the target audience.

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