HEALTH PSYCHOLOGY BULLETIN

EDITORIAL HISTORY

Novelty as a Parameter for Using Arguments in Persuasive Communication

Gerjo Kok

This document contains the editorial history, organized into three sections. This first section, section 0, provides background information about the paper and the review procedure. Section 1 is organized chronologically and contains the editorial communication and peer review history. Section 2 contains the successive preprints and is organized anti-chronologically.

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Senior editor:	Kerry Chamberlain
Peer reviewer A:	Mia Silfver
Peer reviewer B:	Diana Tăut

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Paper abstract

Background: In this paper, a series of studies investigating one of the parameters for effectiveness in relation to using arguments in persuasive communication messages is described: the novelty of arguments.

Method: The first study involves the elicitation of arguments, the second study entails the identification of novel arguments, and the third study focuses on the influence of novel versus familiar arguments. The main hypothesis for this series of studies was: Messages with novel, valid and relevant arguments will lead to more attitude change than messages with familiar, valid and relevant arguments.

Results: This hypothesis is supported by the data: messages with new, valid and relevant arguments led to more attitude change than messages with familiar, valid and relevant arguments.

Discussion: To ensure the central processing of arguments, messages need to be new to the receiver. There is a need for more experimental studies identifying parameters for effectiveness in relation to various behavior change methods.

Background

This peer review history is published under Health Psychology Bulletin's peer review policy. Peer review at Health Psychology Bulletin (HPB) is blind, but upon acceptance of an article, the entire peer review history is made public. This policy has two aims. First, it makes the reviews citable, rewarding reviewers for their reviews, incentivizing thorough, thoughtful reviews, and stimulating constructive, considerate reviews and responses. Second, to yield the best of both worlds in terms of design of the review procedure. The common procedure of shielding authors' and peer reviewers' identities aims to prevent undue harshness or leniency. However, this anonymity also protects reviewers who make unreasonable requests or statements that are inconsistent with the literature, and authors who refuse to respond adequately to reviewers' requests. These risks are ameliorated by unblinding and publishing the peer review procedure upon paper acceptance.

Health Psychology Bulletin

Health Psychology Bulletin (HPB) is an official journal of the European Health Psychology Society (EHPS). It implements a number of innovative practices such as this peer review procedure, a strong full disclosure policy, a two-tiered review procedure, and explicitly welcoming null findings, replications, and reports of lessons learned such as failed manipulations or measurement instruments, as well as regular articles.

Section 1: editorial correspondence

This section is comprised of the editor-author correspondence followed by the review reports in chronological order.

2018-01-11

Dear editor,

In this paper, a study investigating the parameters for effectiveness in relation to using arguments in persuasive communication messages is described. This study was part of the author's PhD dissertation (written in Dutch), and laid the groundwork for a larger study comparing the influence of arguments versus social comparison (Kok, 1983). This larger study has been published (Kok et al., 1986, in Dutch). The study described here has never been published before (unfortunately, the original data are lost and some information is not reported here because it was not reported in the dissertation or in the chapter). Nevertheless, in hindsight, the study demonstrates perfectly the relevance of parameters for effectiveness. The data are from 1983, but the process outlined here is just as relevant today.

The study has demonstrated that, to ensure the central processing of arguments, messages need to be new to the receiver. Experimental studies identifying parameters for effectiveness in relation to various behavior change methods are, unfortunately, scarce. There is, however, a great need for these kinds of studies, in order to provide evidence for the conditions under which interventions may be more or less successful.

Best wishes, Gerjo

Section Editor
2020-09-23 05:35 AM

Subject: [HPB] Editor Decision - "The crucial role of argument novelty in attitude change; an empirical investigation of parameters for effectiveness for the behavior change method persuasive communication"

Dear Gerjo Kok,

After review, we have reached a decision regarding your submission to Health Psychology Bulletin, "The crucial role of argument novelty in attitude change; an empirical investigation of parameters for effectiveness for the behavior change method persuasive communication". Our decision is to request revisions of the manuscript prior to acceptance for publication.

The full review information should be included at the bottom of this email. There may also be a copy of the manuscript file with reviewer comments available once you have accessed the submission account. Please consider the points raised by the reviewers, the journal guidelines and revise the file accordingly.

To access your submission account, follow the below instructions:

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Please ensure that your revised files adhere to our author guidelines, and that the files are fully copyedited/proofed prior to upload. Please also ensure that all copyright permissions have been attained. This is the last opportunity for major editing, therefore please fully check your file prior to re-submission.

If you have any questions or difficulties during this process, please do contact us.

Please could you have the revisions submitted by the 7th of October. If you cannot make this deadline, please let us know as early as possible.

Kind regards,

Nelli Hankonen
University of Helsinki
nelli.hankonen@helsinki.fi

Reviewer E:

Section 1a, Full Disclosure: Replication Package: Note that for any of these elements, an

Author
2020-11-02 10:28 AM

Subject: The crucial role of argument novelty in attitude change; an empirical investigation of parameters for effectiveness for the behavior change method persuasive communication

Dear Nelli,

please find attached the revised version of my paper including a response to the reviewers,

Kind regards,

Gerjo

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Reviewer 1	
<p>The topic of the manuscript is interesting and relevant. However, it is quite unusual to publish now a study conducted in 1983 (of which the original data has been lost!). I am not convinced that nothing has changed since the 80's in terms of how students react to different arguments. If there was a replication of this study with new data included, then this could be interesting. The literature review is extremely scarce, only three pages of the total 14 (excluding references). Is the author really claiming that no one has tested Burnstein & Vinokur-model with the novelty aspect since late 70's? Or any similar model? The manuscript should present previous studies on the topic and argue how the presented studies contribute to these findings.</p>	<p>Maybe surprising, but as far as I know, the answer is: No one has tested the novelty aspect of arguments since B&V and V&B (or only novelty without validity and/or relevance). ELM refers to novelty but without specific studies All references to B&V 1977 and V&B 1978 refer to other aspects than novelty, mostly social comparison and group polarization. p.8: Added: ... attitude change is more likely to occur only when those arguments are also new to the receiver. <i>That may be relatively evident, but as far as we know, there has been no other empirical evidence for this phenomenon since Burnstein & Vinokur, 1977 and Vinokur & Burnstein, 1978). Broecks et al., 2016 studied novelty of arguments but not novelty combined with relevance and validity, and found no effect of that type of novelty.</i></p>
<p>Minor issues: -The title is too long, only the first part would do just fine (The crucial role of argument novelty in attitude change).</p>	<p>p.1: Done <i>The crucial role of argument novelty in attitude change</i></p>
<p>- The formulation "is discussed" is not recommendable in the abstract, what is your conclusion?</p>	<p>p.1: Discussion. <i>There is a need for more experimental studies identifying parameters for effectiveness in relation to various behavior change methods.</i></p>
Reviewer 2	
<p>Abstract: a more structured abstract would be helpful, detailing the background, methods(s), results, discussion,</p>	<p>p.1: Done</p>

and more detail should be added to statements like “the hypothesis is supported by the data.”	
<p>Introduction & Discussion</p> <p>It is clear that this research focuses on argument’s characteristics in persuasive communication, using the ELM as a framework. This approach has its merits and a detailed description of a research conducted to establish what novel arguments are and whether they are persuasive, is very useful for further research in health communication. However, the ELM also describes how the motivation to process the message and the perceived importance of the message itself facilitates/interferes with persuasion. Although not the focus of this paper, including a brief discussion on how the perceived importance/personal relevance of the message influence the way we assess it in terms of other characteristics (novelty, relevance, validity etc.) and further contributes to persuasion would result in a stronger paper. For instance, most health messages should be, in theory, very relevant for the target population. Is this different/similar with the topic discussed here? To what extent can we extrapolate these findings from a rather abstract topic (rewards in education) to a personally relevant one (exercising, wearing a mask etc.)?</p> <p>Introduction</p>	<p>I agree completely with the reviewer, but the focus of this study was not on relevance. I have added a sentence on page 2:</p> <p>... health promoters try to develop high quality messages containing arguments that are new, as well as relevant and valid, and which promote change in the right direction. <i>This combination is essential; it is easy to come up with new arguments, but is extremely difficult to provide new arguments for the target population that are also relevant, valid and in the right direction.</i></p>
Pag2, 1st paragraph: an example of what are parameters of effectiveness would add more clarity to the concept and set the background more strongly.	p.1: and (4) the parameters for effectiveness (<i>the conditions under which the methods are shown to be effective</i>) must be satisfied in the final application of the method
<p>Discussion</p> <p>The author(s) following observation should be elaborated more, in light on my previous comment on the introduction/discussion: “as mentioned earlier, the attitude topic chosen is not related to the field of health promotion, due to the difficulties of generating new arguments in relation to a topic that is highly relevant to the participants. There is, however, no reason to assume that this process would be different for health promotion topics”. Why do the author(s) think that the process would be identical for health promotion topics?</p>	<p>p.9: Discussion – added:</p> <p>As mentioned earlier, the attitude topic chosen is not related to the field of health promotion, due to the difficulties of generating new arguments in relation to a topic that is highly relevant to the participants. There is, however, no reason to assume that this process would be different for health promotion topics <i>as long as the arguments used are novel, relevant, valid and in the right direction for the target population.</i></p>
I believe that some of the discussion(s) belong to the introduction. For instance, the conceptual (in)distinction between novel argument versus novel information that counters already existing beliefs would improve conceptual grounding before describing the actual research.	I am not sure what the reviewer means exactly. A novel argument contains novel information. In addition, novelty does not necessarily counter existing beliefs.
<p>Study 1</p> <p>Method:</p> <p>Participants were asked to provide arguments for the</p>	<p>p.8: Added</p> <p>... peripheral processing might lead to more effect of longer arguments, or just as</p>

<p>following statement: "In education, punishments should not be used; only good behavior should be rewarded. This will improve learning achievements". These are actually two statements, one related to rewarding of good behaviours and one related to (supposedly) consequential effects of this: improvement of learning achievements. Although separate assertions, these were taken as a whole. This approach and its potential implications should be acknowledged and discussed.</p>	<p>feasibly against the hypothesis: central processing might lead to less effect of longer arguments. <i>Moreover, the statement about rewards and punishments was not unambiguous; however, the selection of stimulus arguments was based on participants' own judgments.</i></p>
<p>Results- it is not clear how the arguments were sorted in 30 categories (15 in favour/15 against) and then one argument was chosen as the most representative. How was it chosen? Based on frequency of appearance or it was another criterion set in place? Were the other 29 arguments discarded? If so, what would be the point of having categories of arguments? I believe that a short discussion on this and a more structuring/clarity would make this section a bit stronger.</p>	<p>p.3: That was obviously unclear – I have adapted the text: The researchers divided these arguments into two groups, <i>based on consensus discussions</i>: in favor of, or against, the chosen statement. <i>For each of the 30 categories, one argument was then selected to represent that category, resulting in 30 arguments</i></p>
<p>Study 2 Method: In the first study, the arguments were elicited by a diverse sample: high school students, teachers, educational scientists. In this one, they are evaluated in terms of novelty only by high school students. A thing that has not been discussed in introduction is that novelty of arguments is highly dependent on someone's expertise. Thus, I would expect that what is a novel argument for a student might be a common sense one for an educational scientist. At this point, it is not clear who is the target of persuasive communication, as those generating arguments are different than those evaluating their novelty (high school students) and a bit different than those who receive persuasive communication (Law School students). These issues should be clarified in introduction, method (Study 2) and discussions.</p>	<p>The scientists were asked about content, not about novelty. Indeed, the idea was that scientific arguments would partly be new to students – we added on page 7: <i>We expected that some of the arguments of scientists would be new to the non-experts.</i></p> <p>p.8 – added: <i>The participants in study 1 were high school students and those in study 2 were university students, which may have influenced the experience of novelty of the arguments. However, if that were a relevant factor, it would have decreased the effect.</i></p>
<p>Results: It would be helpful to try and combine Table 1 and 2, so to have each of the four novel arguments with values assigned on the four dimensions plus the familiar arguments.</p>	<p>We added the mean scores for novelty to table 2</p>
<p>Minor spelling: Pag 2, paragraph 2-I think it should read promoters instead of promotor.</p>	<p>Correct – confusion with Dutch spelling ...</p>

Editor
2021-01-04 11:59 AM

Subject: [HPB] Editor Decision - "The crucial role of argument novelty in attitude change"

Dear prof. dr. Gerjo Kok,

First, let me wish you a happy 2021 on behalf of Health Psychology Bulletin and my fellow editors.

Unforeseen circumstances have required me to take over the handling of the editorial process for your submission from the previous executive editor, dr. Hankonen.

Based on your revisions of the first submission, one reviewer considers all concerns addressed. The other raises two points that I think remain important to address. The first relates to conflicting literature that seems important to discuss. The second relates to the choice of words which doesn't seem entirely commensurate with the strength of the evidence. Given HPBs aim to strive for accurate reporting I agree with this point (i.e. the sample size relative to the sampling and measurement errors that can be expected doesn't seem to justify strong language).

I hope you concur that these points comprise improvements of the manuscript and are worthwhile to implement. This editorial decision therefore constitutes a request for revisions. For your reference, the full original review information is included at the bottom of this email.

Thank you for your submission to Health Psychology Bulletin, and we look forward to your revision!

---[default text starts below]---

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If you have any questions or difficulties during this process, please do contact us.

Author

2021-01-06 12:45 PM

Subject: The crucial role of argument novelty in attitude change

Dear Dr. Peters,

Hereby I would like to notify you that I uploaded the revised paper under "review" and added the paper with track changes and the response to reviewers as "supplementary materials".

Looking forward to your response,

Gerjo.

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Response to reviewers 2nd revision

I agree with the 'choice of words' comments and I have adapted the title to better reflect the intent of the paper:

Novelty as a parameter for using arguments in persuasive communication

I don't fully agree with the comment about conflicting literature. The Prah et al. paper is indeed about novelty of arguments but in a completely different context: group discussion and attitude polarization. The information they provide about ensuring the correct manipulation of novelty of arguments for their participants is incomplete and not very convincing. I do agree though with the point that novelty is not necessarily the most important aspect of arguments when they are used during group discussions. I have added a paragraph to the Discussion reflecting that issue:

In real life, novelty of arguments is only part of information processing. For example, Prah et al. (2017) studied argument novelty in a study on polarization during group discussions and found no effect of novelty of arguments. They suggest that social validation of shared information may be more important than novelty.

Editor
2021-01-21 02:37 PM

Subject: [HPB] Editor Decision - "The crucial role of argument novelty in attitude change"

Dear prof. dr. Kok,

Thank you for your last revision of your submission to Health Psychology Bulletin, originally titled "The crucial role of argument novelty in attitude change". We are happy to inform you that we decided to accept your submission for publication.

Note that this decision was taken by the team of Editors-in-Chief, as we took over the handling of this manuscript from the original executive editor who is temporarily unable to continue this role. We are under the impression that further discussion between the authors and the reviewers, would certainly be very insightful, and we feel that the modest conceptual literature review that would require/entail would certainly benefit the manuscript. However, we also feel that peer review, even publicly published peer review histories such as this one, are not the place for this. Although a review of evidence on the role of argument novelty, and perhaps how perspectives shifted over the past fifty years, seems a worthwhile undertaking, we consider this beyond the scope of the peer review process.

You will not have to take any other action; we will proceed this submission into typesetting and will notify you when proofs are available.

Thank you very much for having submitted to Health Psychology Bulletin, and we hope that you will consider us for future submissions (which we shall review considerably faster).

Kind regards, also on behalf of Diana Taut and Rik Crutzen,

Gjalt-Jorn Peters
Open University of the Netherlands
gjalt-jorn@behaviorchange.eu

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<http://healthpsychologybulletin.com>

Section 2: manuscript iterations

This section is comprised of the manuscript preprints in anti-chronological order (i.e. the originally submitted manuscript is placed last, preceded by the revisions, with the penultimate version directly following this title page).

The crucial role of argument novelty in attitude change: an empirical investigation of parameters for effectiveness for the behavior change method persuasive communication

ABSTRACT

Background. In this paper, a series of studies investigating one of the parameters for effectiveness in relation to using arguments in persuasive communication messages is described: the novelty of arguments.

Method. The first study involves the elicitation of arguments, the second study entails the identification of novel arguments, and the third study focuses on the influence of novel versus familiar arguments. The main hypothesis for this series of studies was: Messages with novel, valid and relevant arguments will lead to more attitude change than messages with familiar, valid and relevant arguments.

Results. This hypothesis is supported by the data: messages with new, valid and relevant arguments led to more attitude change than messages with familiar, valid and relevant arguments.

Discussion. To ensure the central processing of arguments, messages need to be new to the receiver. The

There is a need for more experimental studies identifying parameters for effectiveness in relation to various behavior change methods is discussed.

INTRODUCTION

Many meta-analyses addressing the effectiveness of behavior change methods have failed to take into account one or more of the four conditions that must be met for a method to effectively influence behavior (1) a method can only influence behavior if it targets beliefs that underlie a determinant that the method can change; (2) these beliefs (and the overarching determinant) must in fact be relevant predictors of the behavior; (3) the method must be translated into a practical application that fits with the target population, its culture, and the relevant context; and (4) the parameters for effectiveness (the conditions under which the methods are shown to be effective) must be satisfied in the final application of the method (Peters et al., 2015; De Bruin et al., 2015). This last condition in particular is often not taken into account. For the coding of behavior change methods, as well as the translation of these methods into practical applications, it is not enough to simply provide a consensus-based definition. It is also essential to identify and satisfy parameters for effectiveness in relation to each chosen method (Bartholomew Eldredge et al., 2016; Kok et al., 2016; Peters & Kok, 2016). All behavior change methods have such parameters for effectiveness (Crutzen & Peters, 2017).

Social psychologists contribute to our knowledge about these parameters by studying behavior change in laboratory settings and conducting experiments that systematically manipulate the relevant concepts being studied. In this paper, a study investigating the parameters for effectiveness in relation to using arguments in persuasive communication messages is described. This study was part of the author's PhD dissertation (written in Dutch), and laid the groundwork for a larger study comparing the influence of arguments versus social comparison (Kok, 1983). This larger study has been published (Kok et al., 1986, in Dutch). The study described here has never been published before (unfortunately, the original data are lost and some information is not reported here because it was not reported in the dissertation or in the chapter). Nevertheless, in hindsight, the study

Argument novelty in attitude change

demonstrates perfectly the relevance of parameters for effectiveness. The data are from 1983, but the process outlined here is just as relevant today.

Health promoters often use messages designed to change attitudes as a first step towards changing intentions and behaviors. One of the most widely used behavior change methods for bringing about attitude change is persuasive communication (McGuire, 2012). Persuasive communication can be defined as communication that guides individuals and environmental agents toward the adoption of an idea, attitude, or action by using arguments or other means (Petty et al., 2009). Arguments can be defined as the use of a set of one or more meaningful premises and a conclusion (Burnstein & Vinokur, 1977; Vinokur & Burnstein, 1978). The Elaboration Likelihood Model (Petty & Wegener, 1998; 2010) predicts that high-quality arguments will be effective only when the receivers process the message through the central route, not when they use the peripheral route. A higher number of arguments does not ensure quality and, in fact, may negatively affect attitude change; they may be convincing for people who process the information through the peripheral route, but they will be less convincing for people who process through the central route. Health promoters try to develop high quality messages and ensure that those receiving these messages process them through the central route, in order to create maintenance of change.

It has been suggested (Vinokur & Burnstein 1978; Burnstein & Vinokur, 1977) that the following four characteristics determine the quality of arguments, that is, their effectiveness after careful processing:

- Direction*, the extent to which the argument supports a specific opinion X or supports the opposite opinion Y;
- Relevance*, the extent to which the argument is relevant to the topic of the message;
- Validity*, the extent to which the argument is true, valid and plausible;
- Novelty*, the extent to which the message contains new arguments, unlikely to have already been considered by the receiver.

These characteristics can be seen as *parameters for effectiveness* for the behavior change method 'Arguments'. Arguments are often used in persuasive communication with the aim of changing attitudes. The series of studies presented here focus on the essential - but often ignored - role of novelty: "For central processing of arguments they need to be *new* to the message receiver" (Bartholomew Eldredge et al., 2016, p.385 and Kok et al., 2016, suppl. p. 10). As a consequence, health promoters try to develop high quality messages containing arguments that are *new*, as well as relevant and valid, and which promote change in the right direction. This combination is essential; it is easy to come up with new arguments, but is extremely difficult to provide new arguments for the target population that are also relevant, valid and in the right direction.

The question that springs to mind, then, is: How does the health promotor identify and select arguments that are new as well as relevant, valid, and also promote change in the right direction? It is not difficult to come up with new arguments; the challenge is to find new arguments that also meet the other three criteria. In the following section, we will describe three studies that, together, nicely demonstrate this process. The first study involves the elicitation of arguments, the second study entails the identification of new arguments, and the third study focuses on the influence of new and familiar arguments. The main hypothesis for this series of studies was: Messages with new,

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valid and relevant arguments will lead to more attitude change than messages with familiar, valid and relevant arguments.

At the time these studies were carried out, ethical approval was not customary; however, all procedures would have been approved by currently accepted standards.

STUDY 1: ELICITATION OF ARGUMENTS

To determine the influence of new and familiar arguments, we first needed to manipulate the level of novelty versus familiarity of arguments in both directions of the scale. An initial study was therefore conducted in order to select these arguments.

Method

The attitude topic chosen for use in this study is not from the area of health promotion. There is, however, no reason to assume that the process would be any different for topics or issues which are related to health promotion. In line with our wish to use a relevant but rarely discussed topic, we decided on "Punishments and rewards in education". The participants in our studies were all high school students or first year university students, meaning that this topic was highly relevant to them. At the same time, we did not consider this to be a widely discussed topic within educational settings. The topic was therefore deemed suitable in terms of identifying new arguments.

Potential arguments were collected among 27 high school students, 16 first year Psychology students, 20 teachers and 14 educational scientists and educational psychologists. They were asked to provide as many arguments as possible either in favor of or against the following statement: "In education, punishments should not be used; only good behavior should be rewarded. This will improve learning achievements". We expected that some of the arguments of scientists would be new to the non-experts.

Results

In total, 230 arguments were collected. The researchers divided these arguments into two groups, based on consensus discussions: in favor of, or against, the chosen statement. For later use in the second study, the arguments were then sorted into 15 categories in each direction. This process combined arguments with similar content into single categories (nine arguments were uninterpretable). OneFor each of the 30 categories, one argument was then selected to represent each of the 30 categories, that category, resulting in 30 arguments (15 in favor of the statement and 15 against).

STUDY 2: SELECTING NEW VERSUS FAMILIAR ARGUMENTS

A second study was conducted in order to assess the arguments generated in study 1 in terms of validity, relevance, novelty, and direction (in favor of or against).

Method

The 30 arguments were evaluated by 76 high school students- (grades 4 and 5). Students read the arguments and judged them on four characteristics using 5-point scales, ranging from "Highly" to "Not at all":

Argument novelty in attitude change

New versus familiar: “We would like to know, in relation to the arguments listed below, whether you are already familiar with these arguments or not. An argument is highly new for you if you don’t know it, have never heard about it and have never thought about it. An argument is highly familiar to you if you do know it, have heard about it often, and have thought about it often”.

Direction (in favor or against): “We would like to know if you think the arguments listed below are in favor of or against the statement provided. An argument can be seen as highly in favor of the statement if it expresses an opinion in line with (in the same directions as) the statement. An argument can be seen as highly against the statement if it expresses an opinion in opposition to (in the opposite direction of) the statement. Note that this is not about your own opinion but only about the direction of the argument”.

Valid or invalid: “We would like to know if you think, given the statement, that the arguments listed below are valid or invalid. An argument can be described as highly valid if you think that the main contention of the argument is completely true. An argument can be described as highly invalid if you think that the main contention of the argument is completely untrue”.

Relevant or irrelevant: “We would like to know if you think, given the statement provided, that the arguments listed below are relevant or irrelevant. An argument is highly relevant if the main contention of the argument is clearly related to the topic of the statement. An argument is highly irrelevant if the main contention of the argument has nothing to do with the topic of the statement”.

In this way, evaluations of all 30 arguments were garnered. The judges (participants) were also asked to record their own opinion on the statement about punishment or rewards, using a 5-point Agree-Disagree scale. Based on these responses, two groups were formed: pro-reward-judges and anti-reward judges. It was necessary to make this distinction because in the third and final study, we needed to be able to provide (under the guise of a cover story) counter arguments to participants who disagreed with the direction of these arguments.

Results

The means for novelty, validity and relevance of pro-reward arguments were calculated for anti-reward participants, and the means for novelty, validity and relevance of anti-reward arguments were calculated for pro-reward participants. The means for direction were as expected. They confirmed the direction that the researchers had initially assigned the arguments in Study 1. In both groups, four (relatively) new arguments and just one familiar argument (to reduce the possibility of introducing novel information in the familiar condition) with the highest possible validity and relevance were selected. The evaluations are presented in Table 1.

Table 1*: Evaluation of arguments; 1 = Low, 5= High; for direction 1 = Against, 5 = In favor.

Pro-reward arguments		Direction	Novelty	Validity	Relevance
New arguments	1	3.4	3.7	2.7	3.2
	2	3.5	3.1	3.5	3.4
	3	3.3	3.4	3.3	3.3
	4	3.3	3.7	2.7	2.6
Familiar argument	1	3.6	1.8	3.6	3.8
Anti-reward arguments		Direction	Novelty	Validity	Relevance

Formatted Table

Argument novelty in attitude change

New arguments	1	2.5	3.8	3.1	3.1
	2	3.0	3.6	3.5	2.6
	3	2.0	3.4	2.5	3.3
	4	2.4	3.3	2.9	2.7
Familiar argument	1	1.9	2.6	2.4	2.4

* SDs were unfortunately not reported in the dissertation.

The four familiar arguments that were later used in the third and final study are variations of the same argument. This argument is also included in the description of the attitude-issue that the participants in Study 3 read before recording their own opinion. The final formulation of the arguments is provided in Table 2. The arguments are presented in the same order as in Table 1. The familiar argument in Table 1 is therefore the first familiar argument in Table 2.

Argument novelty in attitude change

Table 2: The arguments- (with novelty scores: 1-5).

Arguments in favor of using rewards		
New 3.7	1	Using rewards is a more efficient and easy-to-tailor means of maximizing (or improving) learning achievements. For example, a reward, in contrast to a punishment, makes it clear exactly what the desired behavior is.
3.1	2	The use of rewards emphasizes what the student is able to do; contrary to the use of punishment. The use of rewards therefore leads to students developing a more positive self-image.
3.4	3	As a result of using rewards, less talented and less competent students will be better protected, because they will receive positive attention.
3.7	4	In particular, rewards lessen competitiveness among students, which in turn improves the interpersonal relationships among students.
Familiar 1.8	1	One consequence of using rewards is that the individual relationship between the student and the teacher will improve.
	2	Students will work harder for a teacher with whom they have a better relationship.
	3	As a result of using rewards, the atmosphere in the classroom will improve.
	4	Teachers who use punishment will never have a positive relationship with their students.
Arguments against using rewards		
New 3.8	1	Punishments may be very effective if linked to undesirable behavior. To only use rewards requires the teacher to be very skillful.
3.6	2	The use of rewards is only reinforcing when there is also a counteraction; ignoring bad behavior is in fact a form of punishment.
3.4	3	Repeatedly using rewards will decrease their value; punishment is a necessary counteraction.
3.3	4	Avoiding the use of punishment altogether creates a huge difference between school and society, including home life. This may lead to adaptation problems.
Familiar 2.6	1	Bad behavior should be punished, otherwise students will keep repeating the bad behavior.
	2	The use of punishments is the only way to counter bad behavior.
	3	As a consequence of not using punishments, bad behavior is in fact promoted.
	4	Sometimes it is really necessary to use punishments.

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STUDY 3: EFFECTS OF NEW VERSUS FAMILIAR ARGUMENTS ON ATTITUDES

To examine the effects of new arguments versus familiar arguments on attitudes, the third study exposed participants to two conditions, one with (relatively) new arguments and one with (relatively) familiar arguments.

Method

Design. In this study, we tried to influence participants using the arguments generated in the earlier studies. We used the classic Crutchfield (1953) situation: participants arrived in groups, were at

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random placed in separate booths and received fabricated information about the responses of the other participants, i.e. they were told that they would be reading arguments formulated by their fellow participants. We in fact manipulated whether the (previously generated) arguments presented were new or familiar. In the high novelty condition, participants were exposed to four valid, relevant and new arguments. In the low novelty condition, participants were exposed to four valid, relevant and familiar arguments. . In this way, the influence of arguments was manipulated without the participants being able to tell whether different numbers of individuals supported each of these arguments. The arguments needed for this manipulation were selected (based on their mean scores) from those generated in studies 1 and 2. We expected that attitude change would be greater in the direction of the arguments in the high novelty condition (comprising new arguments) compared to the low novelty condition (comprising familiar arguments).

Procedure. Participants were randomly divided over two conditions and, based on their initial position regarding the two statements (see *Attitude topic*), exposed to four arguments counter to their own position: four *new* counterarguments in one condition, four *familiar* counterarguments in the other condition. Participants arrived in groups of eight. Each participant was placed in one cubicle and received instructions through a headphone. Participants were seated in front of a screen on which the statements could be shown, and a keyboard on which they could provide responses to indicate their opinions. In the first part of the experiment, participants were shown 20 topics. Each topic was introduced with a short text, and the participants were asked to indicate what their opinion was on a 100-point scale with extremely contradictory opinions at each end. The target topic of this study - rewards or punishments in education - was presented as the sixth topic. Having given their opinions on all 20 topics, and after a short break, the target topic - rewards or punishments in education - was shown again. Our assumption was that participants would not remember the exact score they had previously given for this topic. The participants then received four arguments with the instruction: "These arguments are related to this topic and were mentioned by earlier participants". Dependent on the condition, participants received four new or four familiar arguments. Participants had two minutes to think about the topic statement and the provided arguments, and then gave their final opinion.

Participants. Participants were 43 students of the School of Law at the University of Groningen (data about age and gender are not available; also, it was not customary to perform power analyses at the time this data was collected).

Attitude topic. Participants gave their opinion on 20 topics about society in general. The sixth topic was the target topic. The description was as follows:

"The next topic is: Rewards and punishments in education. In education, students are repeatedly told how they have performed. Good behavior and good achievements are rewarded. Bad behavior and bad achievements are punished. Some are of the opinion that, in education, one should only use rewards and stop using punishments, resulting in a much better contact between teacher and student. As a result, students' achievements will improve. Another opinion is that punishment of bad behavior is particularly necessary because bad behavior will be encouraged when it is not punished. Punishment will therefore result in better achievements."

The two extreme statements in relation to this topic are:

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0 = In education, one should not use punishments, but only reward good behavior. This will lead to better achievements.

99 = In education, rewards should be rare, while bad behavior should be punished. This will lead to better achievements.

Measures. Attitude change was measured by comparing the responses provided on the 100-point scale before and after reading the four arguments provided. When the second opinion score had moved towards the middle of the scale, i.e. in the direction of the counterarguments, this difference was scored as a positive change. When it moved in the opposite direction, this was scored as a negative change.

Results

Checks. From information gleaned from the post-experiment meetings with the participants, it was concluded that none of them distrusted the source of the given arguments. Moreover, the participants' opinions on the first measurement did not differ between the two conditions ($> .6$).

Attitude change. As hypothesized, we observed more attitude change in the condition with high novelty (new arguments) than in the condition with low novelty (familiar arguments): $M_{\text{new}} = 10.59$ ($N = 22$) against $M_{\text{fam}} = 0.21$ ($N = 21$); $F(1,41) = 9.34$; $p = .004$; $d = 9.34$, $df=41$, $(0.345; 1.620)$.

GENERAL DISCUSSION

Messages with new, valid and relevant arguments led to more attitude change than messages with familiar, valid and relevant arguments. And perhaps obviously, there was no attitude change in the condition with familiar arguments. These data support the notion that certain parameters need to be met in order for arguments to be effective: "For central processing of arguments they need to be new to the message receiver" (Burnstein & Vinokur, 1977; Bartholomew Eldredge et al., 2016; Kok et al., 2016). Just using arguments, even when they are valid and relevant, will not automatically lead to attitude change; attitude change is more likely to occur only when those arguments are also new to the receiver. That may be relatively evident, but as far as we know, there has been no other empirical evidence for this phenomenon since Burnstein & Vinokur, 1977 and Vinokur & Burnstein, 1978. Broecks et al., 2016 studied novelty of arguments but not novelty combined with relevance and validity, and found no effect of that type of novelty.

Identifying new arguments that are also valid and relevant is a time-consuming and difficult process. Given the small differences between high and low novelty, for some of the participants even the "highly novel" arguments may not have been new, which would have weakened the effect. However, if so, this will also be the case in real life. In hindsight, the texts of the new arguments turned out to be somewhat longer than those of the familiar arguments. However, if argument length was indeed influential, the effect of that difference could have been in favor of the hypothesis: peripheral processing might lead to more effect of longer arguments, or just as feasibly against the hypothesis: central processing might lead to less effect of longer arguments. Moreover, the statement about rewards and punishments was not unambiguous; however, the selection of stimulus arguments was based on participants' own judgments.

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The participants in study 1 were high school students and those in study 2 were university students, which may have influenced the experience of novelty of the arguments. However, if that were a relevant factor, it would have decreased the effect.

As mentioned earlier, the attitude topic chosen is not related to the field of health promotion, due to the difficulties of generating new arguments in relation to a topic that is highly relevant to the participants. There is, however, no reason to assume that this process would be different for health promotion topics: as long as the arguments used are novel, relevant, valid and in the right direction for the target population. The power of this study is low and replication studies would be advisable as we are not aware of any comparable experimental studies.

Nevertheless, the outcomes are exactly as hypothesized: Messages with new, valid and relevant arguments lead to more attitude change than messages with familiar, valid and relevant arguments. It may be beneficial for health promoters to use (carefully crafted) new persuasive arguments at the individual level to encourage people to adopt healthful behaviors, as well as new persuasive arguments to influence agents at higher ecological levels. For example, viewing a television broadcast on the impact of environmental tobacco smoke on children's health - and the benefits of protecting children from environmental smoke - may influence a mother to declare her home smoke free, as she had not been aware of those negative effects. Seeing other legislators receive media attention for promoting a healthy policy may lead legislators to vote for health legislation, as they may not have realized that the media would be interested in such topics. In either of these cases, the receivers must both expect new positive (health) outcomes and value those outcomes in order for persuasion to be effective (Bartholomew Eldredge et al., 2016).

All of the arguments used in this study were sufficiently high in validity and relevance, to ensure that we only manipulated whether the argument was new or familiar. In a broader context, novelty may also be interpreted as giving new information that counters existing beliefs. For example, in a study among mail delivery drivers, Siero et al. (1989) found that delivery drivers who had a low intention to adopt a fuel saving driving style differed from delivery drivers with a high intention; they did agree that a fuel saving driving style might save energy, but they also thought that a fuel saving driving style would make the engine 'lazy' and would make them fall behind schedule. Both these beliefs are factually wrong. The drivers with low intentions were unaware what their colleagues thought about a fuel saving driving style. As part of the intervention that Siero et al developed, both misunderstandings were corrected, and a positive perceived norm was introduced. Their intervention resulted in a significant reduction in fuel use by the group of delivery drivers that received the intervention (Siero et al., 1989).

Tailoring interventions to a careful inventory of existing beliefs, as illustrated above, is a crucial element in the Reasoned Action Approach/Theory of Planned Behavior (Fishbein & Ajzen, 2010). This so-called elicitation procedure is a necessary precondition for the development of persuasive communication or other interventions that can be used to change attitudes, perceived norms and perceived behavioral control; a precondition that is too often ignored (Ajzen, 2016):

"An intervention designed to create more favorable intentions requires pilot work that involves (i) eliciting readily accessible behavioral, normative and control beliefs in a representative sample of the target population, (ii) selecting specific existing accessible beliefs

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or, often better, novel beliefs not emitted in the elicitation stage to target in the intervention, (iii) designing an intervention (e.g., persuasive message, group discussion, modelling, etc.) that attacks the selected beliefs, (iv) making sure that the intervention produces large changes in the targeted beliefs and that it does not have countervailing impact effects on unmentioned beliefs and..." (Ajzen, 2016, p. 136).

To summarize, an intervention designed to change attitudes, perceived norms, perceived behavioral control, intentions or behaviors should focus on messages containing new arguments or novel beliefs. Moreover, the content of these messages should be based on the results of pilot studies that can help to identify new arguments or novel beliefs in relation to that particular target population (the receivers).

In conclusion, it has become clear in recent years that certain parameters for effectiveness need to be taken into account in relation to all behavior change methods (Bartholomew Eldredge et al. 2016; Kok et al., 2016). In this article, we have demonstrated the importance of one particular parameter - novelty - for the behavior change method 'Arguments', part of a broader behavior change method called 'Persuasive communication'. These studies have demonstrated that, to ensure the central processing of arguments, messages need to be *new* to the receiver. Experimental studies identifying parameters for effectiveness in relation to various behavior change methods are, unfortunately, scarce. There is, however, a great need for these kinds of studies, in order to provide evidence for the conditions under which interventions may be more or less successful (Peters et al., 2015).

References

- Ajzen, I. (2015). The theory of planned behaviour is alive and well, and not ready to retire: a commentary on Sniehotta, Pesseau, and Araújo-Soares. *Health Psychology Review*, 9(2), 131-137. <http://dx.doi.org/10.1080/17437199.2014.883474>
- Bartholomew Eldredge, L. K., Markham, C. M., Ruiter, R. A. C., Fernández, M. E., Kok, G., & Parcel, G. S. (2016). *Planning health promotion programs: An Intervention Mapping approach*, 4th edition. San Francisco, CA: Jossey-Bass. ISBN-13: 978-1119035497
- Broecks, K. P., van Egmond, S., van Rijnsoever, F. J., Verlinde-van den Berg, M., & Hekkert, M. P. (2016). *Persuasiveness, importance and novelty of arguments about Carbon Capture and Storage. Environmental Science & Policy*, 59, 58-66.
- Burnstein, E., & Vinokur, A. (1977). Persuasive argumentation and social comparison as determinants of attitude polarization. *Journal of Experimental Social Psychology*, 13(4), 315-332.
- De Bruin, M., Crutzen, R., & Peters, G.-J. Y. (2015). Everything should be as simple as possible, but this will still be complex: A reply to various commentaries on IPEBA. *Health Psychology Review*, 9(1), 38-41. doi:10.1080/17437199.2014.981833
- Crutchfield, R. S. (1953). Correlates of individual behavior in a controlled group situation. *American Psychologist*, 8(338), 191-198.
- Crutzen, R., & Peters, G. J. Y. (2017). Evolutionary learning processes as the foundation for behaviour change. *Health Psychology Review*, online. DOI: 10.1080/17437199.2017.1362569
- Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach*. New York, NY: Psychology Press.

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- Kok, G. (1983). *Attitudeverandering binnen groepen; standpunten en argumenten* (Attitude change within groups; positions and arguments). PhD Dissertation, University of Groningen.
- Kok, G., Gottlieb, N. H., Peters, G.-J. Y., Mullen, P. D., Parcel, G. S., Ruiter, R. A. C., Fernández, M. E., Markham, C., & Bartholomew, L. K. (2016). A Taxonomy of behavior change methods; an Intervention Mapping approach. *Health Psychology Review*, 10:3, 297-312, DOI: 10.1080/17437199.2015.1077155
- Kok, G.J., Wilke, H., Knippenberg, A. van & Meertens, R.W. (1986). Attitudeverandering en sociale vergelijking (Attitude change and social comparison). In: Knippenberg, A. van, Poppe, M., Extra, J., Kok, G.J. & Seijdel, E. (Red.), *Fundamentele sociale psychologie, deel 1* (pp. 61-74) (Fundamental Social Psychology, 1). Tilburg University Press.
- McGuire, W. J. (2012). McGuire's classic input-output framework for constructing persuasive messages. In R. E. Rice & C. K. Atkin (Eds.), *Public communication campaigns* (4th ed., pp. 133–146). Thousand Oaks, CA: Sage.
- Peters, G.-J. Y., de Bruin, M., & Crutzen, R. (2015). Everything should be as simple as possible, but no simpler: Towards a protocol for accumulating evidence regarding the active content of health behavior change interventions. *Health Psychology Review*, 9(1), 1–14. doi:10.1080/17437199.2013.848409
- Peters, G.-J. Y. & Kok, G. (2016). All models are wrong, but some are useful: a comment on Ogden (2016) on how to celebrate variability of persons, variability of theories, and systematic behaviour change application and research. *Health Psychology Review*, 10(3), 265-268.
- Petty, R. E., Barden, J., & Wheeler, S. C. (2009). The Elaboration Likelihood model of Persuasion: Developing health promotions for sustained behavioral change. In R. J. DiClemente, R. A. Crosby, & M. Kegler (Eds.), *Emerging theories in health promotion practice and research* (2nd ed., pp. 185–214). San Francisco, CA: Jossey-Bass.
- Petty, R. E., & Wegener, D. T. (1998). Attitude change Multiple roles for persuasive variables. In D. T. Gilbert, S. T. Fiske & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., pp. 323–390). Boston: McGraw-Hill.
- Petty, R. E., & Wegener, D. T. (2010). Attitude change: Multiple roles for persuasion variables. In R. F. Baumeister & E. J. Finkel (Eds.), *Advanced social psychology: The state of the science* (pp. 217–259). Oxford: Oxford University Press.
- Siero, S., Boon, M.E., Kok, G. & Siero, F.W. (1989). Modification of driving behavior in a large transport organization: a field experiment. *Journal of Applied Psychology*, 74, 417-423.
- Vinokur, A., & Burnstein, E. (1978). Novel argumentation and attitude change: The case of polarization following group discussion. *European Journal of Social Psychology*, 8(3), 335-348.

The crucial role of argument novelty in attitude change; an empirical investigation of parameters for effectiveness for the behavior change method persuasive communication

ABSTRACT

In this paper, a series of studies investigating one of the parameters for effectiveness in relation to using arguments in persuasive communication messages is described: the novelty of arguments. The first study involves the elicitation of arguments, the second study entails the identification of novel arguments, and the third study focuses on the influence of novel versus familiar arguments. The main hypothesis for this series of studies was: Messages with novel, valid and relevant arguments will lead to more attitude change than messages with familiar, valid and relevant arguments. This hypothesis is supported by the data. To ensure the central processing of arguments, messages need to be new to the receiver. The need for experimental studies identifying parameters for effectiveness in relation to various behavior change methods is discussed.

INTRODUCTION

Many meta-analyses addressing the effectiveness of behavior change methods have failed to take into account one or more of the four conditions that must be met for a method to effectively influence behavior (1) a method can only influence behavior if it targets beliefs that underlie a determinant that the method can change; (2) these beliefs (and the overarching determinant) must in fact be relevant predictors of the behavior; (3) the method must be translated into a practical application that fits with the target population, its culture, and the relevant context; and (4) the parameters for effectiveness must be satisfied in the final application of the method (Peters et al., 2015; De Bruin et al., 2015). This last condition in particular is often not taken into account. For the coding of behavior change methods, as well as the translation of these methods into practical applications, it is not enough to simply provide a consensus-based definition. It is also essential to

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identify and satisfy parameters for effectiveness in relation to each chosen method (Bartholomew Eldredge et al., 2016; Kok et al., 2016; Peters & Kok, 2016). All behavior change methods have such parameters for effectiveness (Crutzen & Peters, 2017).

Social psychologists contribute to our knowledge about these parameters by studying behavior change in laboratory settings and conducting experiments that systematically manipulate the relevant concepts being studied. In this paper, a study investigating the parameters for effectiveness in relation to using arguments in persuasive communication messages is described. This study was part of the author's PhD dissertation (written in Dutch), and laid the groundwork for a larger study comparing the influence of arguments versus social comparison (Kok, 1983). This larger study has been published (Kok et al., 1986, in Dutch). The study described here has never been published before (unfortunately, the original data are lost and some information is not reported here because it was not reported in the dissertation or in the chapter). Nevertheless, in hindsight, the study demonstrates perfectly the relevance of parameters for effectiveness. The data are from 1983, but the process outlined here is just as relevant today.

Health promoters often use messages designed to change attitudes as a first step towards changing intentions and behaviors. One of the most widely used behavior change methods for bringing about attitude change is persuasive communication (McGuire, 2012). Persuasive communication can be defined as communication that guides individuals and environmental agents toward the adoption of an idea, attitude, or action by using arguments or other means (Petty et al., 2009). Arguments can be defined as the use of a set of one or more meaningful premises and a conclusion (Burnstein & Vinokur, 1977; Vinokur & Burnstein, 1978). The Elaboration Likelihood Model (Petty & Wegener, 1998; 2010) predicts that high-quality arguments will be effective only when the receivers process the message through the central route, not when they use the peripheral route. A higher number of arguments does not ensure quality and, in fact, may negatively affect attitude change; they may be

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convincing for people who process the information through the peripheral route, but they will be less convincing for people who process through the central route. Health promoters try to develop high quality messages and ensure that those receiving these messages process them through the central route, in order to create maintenance of change.

It has been suggested (Vinokur & Burnstein 1978; Burnstein & Vinokur, 1977) that the following four characteristics determine the quality of arguments, that is, their effectiveness after careful processing:

Direction, the extent to which the argument supports a specific opinion X or supports the opposite opinion Y;

Relevance, the extent to which the argument is relevant to the topic of the message;

Validity, the extent to which the argument is true, valid and plausible;

Novelty, the extent to which the message contains new arguments, unlikely to have already been considered by the receiver.

These characteristics can be seen as *parameters for effectiveness* for the behavior change method 'Arguments'. Arguments are often used in persuasive communication with the aim of changing attitudes. The series of studies presented here focus on the essential - but often ignored - role of novelty: "For central processing of arguments they need to be *new* to the message receiver" (Bartholomew Eldredge et al., 2016, p.385 and Kok et al., 2016, suppl. p. 10). As a consequence, health promoters try to develop high quality messages containing arguments that are *new*, as well as relevant and valid, and which promote change in the right direction.

The question that springs to mind, then, is: How does the health promotor identify and select arguments that are new as well as relevant, valid, and also promote change in the right direction? It is not difficult to come up with new arguments; the challenge is to find new arguments that also

meet the other three criteria. In the following section, we will describe three studies that, together, nicely demonstrate this process. The first study involves the elicitation of arguments, the second study entails the identification of new arguments, and the third study focuses on the influence of new and familiar arguments. The main hypothesis for this series of studies was: Messages with new, valid and relevant arguments will lead to more attitude change than messages with familiar, valid and relevant arguments.

At the time these studies were carried out, ethical approval was not customary; however, all procedures would have been approved by currently accepted standards.

STUDY 1: ELICITATION OF ARGUMENTS

To determine the influence of new and familiar arguments, we first needed to manipulate the level of novelty versus familiarity of arguments in both directions of the scale. An initial study was therefore conducted in order to select these arguments.

Method

The attitude topic chosen for use in this study is not from the area of health promotion. There is, however, no reason to assume that the process would be any different for topics or issues which are related to health promotion. In line with our wish to use a relevant but rarely discussed topic, we decided on “Punishments and rewards in education”. The participants in our studies were all high school students or first year university students, meaning that this topic was highly relevant to them. At the same time, we did not consider this to be a widely discussed topic within educational settings. The topic was therefore deemed suitable in terms of identifying new arguments.

Potential arguments were collected among 27 high school students, 16 first year Psychology students, 20 teachers and 14 educational scientists and educational psychologists. They were asked

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to provide as many arguments as possible either in favor of or against the following statement: “In education, punishments should not be used; only good behavior should be rewarded. This will improve learning achievements”.

Results

In total, 230 arguments were collected. The researchers divided these arguments into two groups: in favor of, or against, the chosen statement. For later use in the second study, the arguments were then sorted into 15 categories in each direction. This process combined arguments with similar content into single categories (nine arguments were uninterpretable). One argument was then selected to represent each of the 30 categories, resulting in 30 arguments (15 in favor of the statement and 15 against)

STUDY 2: SELECTING NEW VERSUS FAMILIAR ARGUMENTS

A second study was conducted in order to assess the arguments generated in study 1 in terms of validity, relevance, novelty, and direction (in favor of or against).

Method

The 30 arguments were evaluated by 76 high school students. Students read the arguments and judged them on four characteristics using 5-point scales, ranging from “Highly” to “Not at all”:

New versus familiar: “We would like to know, in relation to the arguments listed below, whether you are already familiar with these arguments or not. An argument is highly new for you if you don’t know it, have never heard about it and have never thought about it. An argument is highly familiar to you if you do know it, have heard about it often, and have thought about it often”.

Direction (in favor or against): “We would like to know if you think the arguments listed below are in favor of or against the statement provided. An argument can be seen as highly

in favor of the statement if it expresses an opinion in line with (in the same directions as) the statement. An argument can be seen as highly against the statement if it expresses an opinion in opposition to (in the opposite direction of) the statement. Note that this is not about your own opinion but only about the direction of the argument”.

Valid or invalid: “We would like to know if you think, given the statement, that the arguments listed below are valid or invalid. An argument can be described as highly valid if you think that the main contention of the argument is completely true. An argument can be described as highly invalid if you think that the main contention of the argument is completely untrue”.

Relevant or irrelevant: “We would like to know if you think, given the statement provided, that the arguments listed below are relevant or irrelevant. An argument is highly relevant if the main contention of the argument is clearly related to the topic of the statement. An argument is highly irrelevant if the main contention of the argument has nothing to do with the topic of the statement”.

In this way, evaluations of all 30 arguments were garnered. The judges (participants) were also asked to record their own opinion on the statement about punishment or rewards, using a 5-point Agree-Disagree scale. Based on these responses, two groups were formed: pro-reward-judges and anti-reward judges. It was necessary to make this distinction because in the third and final study, we needed to be able to provide (under the guise of a cover story) counter arguments to participants who disagreed with the direction of these arguments.

Results

The means for novelty, validity and relevance of pro-reward arguments were calculated for anti-reward participants, and the means for novelty, validity and relevance of anti-reward arguments were calculated for pro-reward participants. The means for direction were as expected. They confirmed the direction that the researchers had initially assigned the arguments in Study 1. In both

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groups, four (relatively) new arguments and just one familiar argument (to reduce the possibility of introducing novel information in the familiar condition) with the highest possible validity and relevance were selected. The evaluations are presented in Table 1.

Table 1*: Evaluation of arguments; 1 = Low, 5= High; for direction 1 = Against, 5 = In favor.

Pro-reward arguments		Direction	Novelty	Validity	Relevance
New arguments	1	3.4	3.7	2.7	3.2
	2	3.5	3.1	3.5	3.4
	3	3.3	3.4	3.3	3.3
	4	3.3	3.7	2.7	2.6
Familiar argument	1	3.6	1.8	3.6	3.8
Anti-reward arguments		Direction	Novelty	Validity	Relevance
New arguments	1	2.5	3.8	3.1	3.1
	2	3.0	3.6	3.5	2.6
	3	2.0	3.4	2.5	3.3
	4	2.4	3.3	2.9	2.7
Familiar argument	1	1.9	2.6	2.4	2.4

* SDs were unfortunately not reported in the dissertation.

The four familiar arguments that were later used in the third and final study are variations of the same argument. This argument is also included in the description of the attitude-issue that the participants in Study 3 read before recording their own opinion. The final formulation of the arguments is provided in Table 2. The arguments are presented in the same order as in Table 1. The familiar argument in Table 1 is therefore the first familiar argument in Table 2.

Table 2: The arguments.

Arguments in favor of using rewards		
New	1	Using rewards is a more efficient and easy-to-tailor means of maximizing (or improving) learning achievements. For example, a reward, in contrast to a punishment, makes it clear exactly what the desired behavior is.
	2	The use of rewards emphasizes what the student is able to do; contrary to the use of punishment. The use of rewards therefore leads to students developing a more positive self-image.
	3	As a result of using rewards, less talented and less competent students will be better protected, because they will receive positive attention.
	4	In particular, rewards lessen competitiveness among students, which in turn improves the interpersonal relationships among students.
Familiar	1	One consequence of using rewards is that the individual relationship between the student and the teacher will improve.
	2	Students will work harder for a teacher with whom they have a better relationship.
	3	As a result of using rewards, the atmosphere in the classroom will improve.
	4	Teachers who use punishment will never have a positive relationship with their students.
Arguments against using rewards		
New	1	Punishments may be very effective if linked to undesirable behavior. To only use rewards requires the teacher to be very skillful.
	2	The use of rewards is only reinforcing when there is also a counteraction; ignoring bad behavior is in fact a form of punishment.
	3	Repeatedly using rewards will decrease their value; punishment is a necessary counteraction.
	4	Avoiding the use of punishment altogether creates a huge difference between school and society, including home life. This may lead to adaptation problems.
Familiar	1	Bad behavior should be punished, otherwise students will keep repeating the bad behavior.
	2	The use of punishments is the only way to counter bad behavior.
	3	As a consequence of not using punishments, bad behavior is in fact promoted.
	4	Sometimes it is really necessary to use punishments.

STUDY 3: EFFECTS OF NEW VERSUS FAMILIAR ARGUMENTS ON ATTITUDES

To examine the effects of new arguments versus familiar arguments on attitudes, the third study exposed participants to two conditions, one with (relatively) new arguments and one with (relatively) familiar arguments.

Method

Design. In this study, we tried to influence participants using the arguments generated in the earlier studies. We used the classic Crutchfield (1953) situation: participants arrived in groups, were at random placed in separate booths and received fabricated information about the responses of the other participants, i.e. they were told that they would be reading arguments formulated by their fellow participants. We in fact manipulated whether the (previously generated) arguments presented were new or familiar. In the high novelty condition, participants were exposed to four valid, relevant and new arguments. In the low novelty condition, participants were exposed to four valid, relevant and familiar arguments. . In this way, the influence of arguments was manipulated without the participants being able to tell whether different numbers of individuals supported each of these arguments. The arguments needed for this manipulation were selected (based on their mean scores) from those generated in studies 1 and 2. We expected that attitude change would be greater in the direction of the arguments in the high novelty condition (comprising new arguments) compared to the low novelty condition (comprising familiar arguments).

Procedure. Participants were randomly divided over two conditions and, based on their initial position regarding the two statements (see *Attitude topic*), exposed to four arguments counter to their own position: four *new* counterarguments in one condition, four *familiar* counterarguments in the other condition. Participants arrived in groups of eight. Each participant was placed in one cubicle and received instructions through a headphone. Participants were seated in front of a screen

on which the statements could be shown, and a keyboard on which they could provide responses to indicate their opinions. In the first part of the experiment, participants were shown 20 topics. Each topic was introduced with a short text, and the participants were asked to indicate what their opinion was on a 100-point scale with extremely contradictory opinions at each end. The target topic of this study - rewards or punishments in education - was presented as the sixth topic. Having given their opinions on all 20 topics, and after a short break, the target topic - rewards or punishments in education - was shown again. Our assumption was that participants would not remember the exact score they had previously given for this topic. The participants then received four arguments with the instruction: "These arguments are related to this topic and were mentioned by earlier participants". Dependent on the condition, participants received four new or four familiar arguments. Participants had two minutes to think about the topic statement and the provided arguments, and then gave their final opinion.

Participants. Participants were 43 students of the School of Law at the University of Groningen (data about age and gender are not available; also, it was not customary to perform power analyses at the time this data was collected).

Attitude topic. Participants gave their opinion on 20 topics about society in general. The sixth topic was the target topic. The description was as follows:

"The next topic is: Rewards and punishments in education. In education, students are repeatedly told how they have performed. Good behavior and good achievements are rewarded. Bad behavior and bad achievements are punished. Some are of the opinion that, in education, one should only use rewards and stop using punishments, resulting in a much better contact between teacher and student. As a result, students' achievements will improve. Another opinion is that punishment of bad behavior is particularly necessary because bad

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behavior will be encouraged when it is not punished. Punishment will therefore result in better achievements.”

The two extreme statements in relation to this topic are:

0 = In education, one should not use punishments, but only reward good behavior. This will lead to better achievements.

99 = In education, rewards should be rare, while bad behavior should be punished. This will lead to better achievements.

Measures. Attitude change was measured by comparing the responses provided on the 100-point scale before and after reading the four arguments provided. When the second opinion score had moved towards the middle of the scale, i.e. in the direction of the counterarguments, this difference was scored as a positive change. When it moved in the opposite direction, this was scored as a negative change.

Results

Checks. From information gleaned from the post-experiment meetings with the participants, it was concluded that none of them distrusted the source of the given arguments. Moreover, the participants' opinions on the first measurement did not differ between the two conditions ($> .6$).

Attitude change. As hypothesized, we observed more attitude change in the condition with high novelty (new arguments) than in the condition with low novelty (familiar arguments): $M_{\text{new}} = 10.59$ ($N = 22$) against $M_{\text{fam}} = 0.21$ ($N = 21$); $F(1,41) = 9.34$; $p = .004$; $d = 9.34$, $df=41$, (0.345; 1.620).

GENERAL DISCUSSION

Messages with new, valid and relevant arguments led to more attitude change than messages with familiar, valid and relevant arguments. And perhaps obviously, there was no attitude change in the

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condition with familiar arguments. These data support the notion that certain parameters need to be met in order for arguments to be effective: “For central processing of arguments they need to be new to the message receiver” (Burnstein & Vinokur, 1977; Bartholomew Eldredge et al., 2016; Kok et al., 2016). Just using arguments, even when they are valid and relevant, will not automatically lead to attitude change; attitude change is more likely to occur only when those arguments are also new to the receiver.

Identifying new arguments that are also valid and relevant is a time-consuming and difficult process. Given the small differences between high and low novelty, for some of the participants even the “highly novel” arguments may not have been new, which would have weakened the effect. However, if so, this will also be the case in real life. In hindsight, the texts of the new arguments turned out to be somewhat longer than those of the familiar arguments. However, if argument length was indeed influential, the effect of that difference could have been in favor of the hypothesis: peripheral processing might lead to more effect of longer arguments, or just as feasibly against the hypothesis: central processing might lead to less effect of longer arguments.

As mentioned earlier, the attitude topic chosen is not related to the field of health promotion, due to the difficulties of generating new arguments in relation to a topic that is highly relevant to the participants. There is, however, no reason to assume that this process would be different for health promotion topics. The power of this study is low and replication studies would be advisable as we are not aware of any comparable experimental studies.

Nevertheless, the outcomes are exactly as hypothesized: Messages with new, valid and relevant arguments lead to more attitude change than messages with familiar, valid and relevant arguments. It may be beneficial for health promoters to use (carefully crafted) new persuasive arguments at the individual level to encourage people to adopt healthful behaviors, as well as new persuasive

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arguments to influence agents at higher ecological levels. For example, viewing a television broadcast on the impact of environmental tobacco smoke on children's health - and the benefits of protecting children from environmental smoke - may influence a mother to declare her home smoke free, as she had not been aware of those negative effects. Seeing other legislators receive media attention for promoting a healthy policy may lead legislators to vote for health legislation, as they may not have realized that the media would be interested in such topics. In either of these cases, the receivers must both expect new positive (health) outcomes and value those outcomes in order for persuasion to be effective (Bartholomew Eldredge et al., 2016).

All of the arguments used in this study were sufficiently high in validity and relevance, to ensure that we only manipulated whether the argument was new or familiar. In a broader context, novelty may also be interpreted as giving new information that counters existing beliefs. For example, in a study among mail delivery drivers, Siero et al. (1989) found that delivery drivers who had a low intention to adopt a fuel saving driving style differed from delivery drivers with a high intention; they did agree that a fuel saving driving style might save energy, but they also thought that a fuel saving driving style would make the engine 'lazy' and would make them fall behind schedule. Both these beliefs are factually wrong. The drivers with low intentions were unaware what their colleagues thought about a fuel saving driving style. As part of the intervention that Siero et al developed, both misunderstandings were corrected, and a positive perceived norm was introduced. Their intervention resulted in a significant reduction in fuel use by the group of delivery drivers that received the intervention (Siero et al., 1989).

Tailoring interventions to a careful inventory of existing beliefs, as illustrated above, is a crucial element in the Reasoned Action Approach/Theory of Planned Behavior (Fishbein & Ajzen, 2010). This so-called elicitation procedure is a necessary precondition for the development of persuasive

communication or other interventions that can be used to change attitudes, perceived norms and perceived behavioral control; a precondition that is too often ignored (Ajzen, 2016):

“An intervention designed to create more favorable intentions requires pilot work that involves (i) eliciting readily accessible behavioral, normative and control beliefs in a representative sample of the target population, (ii) selecting specific existing accessible beliefs or, often better, novel beliefs not emitted in the elicitation stage to target in the intervention, (iii) designing an intervention (e.g., persuasive message, group discussion, modelling, etc.) that attacks the selected beliefs, (iv) making sure that the intervention produces large changes in the targeted beliefs and that it does not have countervailing impact effects on unmentioned beliefs and...” (Ajzen, 2016, p. 136).

To summarize, an intervention designed to change attitudes, perceived norms, perceived behavioral control, intentions or behaviors should focus on messages containing new arguments or novel beliefs. Moreover, the content of these messages should be based on the results of pilot studies that can help to identify new arguments or novel beliefs in relation to that particular target population (the receivers).

In conclusion, it has become clear in recent years that certain parameters for effectiveness need to be taken into account in relation to all behavior change methods (Bartholomew Eldredge et al. 2016; Kok et al., 2016). In this article, we have demonstrated the importance of one particular parameter - novelty - for the behavior change method ‘Arguments’, part of a broader behavior change method called ‘Persuasive communication’. These studies have demonstrated that, to ensure the central processing of arguments, messages need to be *new* to the receiver. Experimental studies identifying parameters for effectiveness in relation to various behavior change methods are, unfortunately, scarce. There is, however, a great need for these kinds of studies, in order to provide evidence for the conditions under which interventions may be more or less successful (Peters et al., 2015).

References

- Ajzen, I. (2015). The theory of planned behaviour is alive and well, and not ready to retire: a commentary on Sniehotta, Penseau, and Araújo-Soares. *Health Psychology Review*, 9(2), 131-137. <http://dx.doi.org/10.1080/17437199.2014.883474>
- Bartholomew Eldredge, L. K., Markham, C. M., Ruiter, R. A. C., Fernández, M. E., Kok, G., & Parcel, G. S. (2016). *Planning health promotion programs: An Intervention Mapping approach*, 4th edition. San Francisco, CA: Jossey-Bass. ISBN-13: 978-1119035497
- Burnstein, E., & Vinokur, A. (1977). Persuasive argumentation and social comparison as determinants of attitude polarization. *Journal of Experimental Social Psychology*, 13(4), 315-332.
- De Bruin, M., Crutzen, R., & Peters, G.-J. Y. (2015). Everything should be as simple as possible, but this will still be complex: A reply to various commentaries on IPEBA. *Health Psychology Review*, 9(1), 38–41. doi:10.1080/17437199.2014.981833
- Crutchfield, R. S. (1953). Correlates of individual behavior in a controlled group situation. *American Psychologist*, 8(338), 191-198.
- Crutzen, R., & Peters, G. J. Y. (2017). Evolutionary learning processes as the foundation for behaviour change. *Health Psychology Review*, online. DOI: 10.1080/17437199.2017.1362569
- Fishbein, M., & Ajzen, I. (2010). *Predicting and changing behavior: The reasoned action approach*. New York, NY: Psychology Press.
- Kok, G. (1983). *Attitudeverandering binnen groepen; standpunten en argumenten (Attitude change within groups; positions and arguments)*. PhD Dissertation, University of Groningen.
- Kok, G., Gottlieb, N. H., Peters, G.-J. Y., Mullen, P. D., Parcel, G. S., Ruiter, R. A. C., Fernández, M. E., Markham, C., & Bartholomew, L. K. (2016). A Taxonomy of behavior change methods; an

Intervention Mapping approach. *Health Psychology Review*, 10:3, 297-312, DOI:
10.1080/17437199.2015.1077155

Kok, G.J., Wilke, H., Knippenberg, A. van & Meertens, R.W. (1986). Attitudeverandering en sociale vergelijking (Attitude change and social comparison). In: Knippenberg, A. van, Poppe, M., Extra, J., Kok, G.J. & Seijdel, E. (Red.), *Fundamentele sociale psychologie, deel 1* (pp. 61-74) (Fundamental Social Psychology, 1). Tilburg University Press.

McGuire, W. J. (2012). McGuire's classic input-output framework for constructing persuasive messages. In R. E. Rice & C. K. Atkin (Eds.), *Public communication campaigns* (4th ed., pp. 133–146). Thousand Oaks, CA: Sage.

Peters, G.-J. Y., de Bruin, M., & Crutzen, R. (2015). Everything should be as simple as possible, but no simpler: Towards a protocol for accumulating evidence regarding the active content of health behavior change interventions. *Health Psychology Review*, 9(1), 1–14.
doi:10.1080/17437199.2013.848409

Peters, G.-J.Y. & Kok, G. (2016). All models are wrong, but some are useful: a comment on Ogden (2016) on how to celebrate variability of persons, variability of theories, and systematic behaviour change application and research. *Health Psychology Review*, 10(3), 265-268.

Petty, R. E., Barden, J., & Wheeler, S. C. (2009). The Elaboration Likelihood model of Persuasion: Developing health promotions for sustained behavioral change. In R. J. DiClemente, R. A. Crosby, & M. Kegler (Eds.), *Emerging theories in health promotion practice and research* (2nd ed., pp. 185–214). San Francisco, CA: Jossey-Bass.

Petty, R. E., & Wegener, D. T. (1998). Attitude change Multiple roles for persuasive variables. In D. T. Gilbert, S. T. Fiske & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., pp. 323–390). Boston: McGraw-Hill.

Petty, R. E., & Wegener, D. T. (2010). Attitude change: Multiple roles for persuasion variables. In R. F. Baumeister & E. J. Finkel (Eds.), *Advanced social psychology: The state of the science* (pp. 217–259). Oxford: Oxford University Press.

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Siero, S., Boon, M.E., Kok, G. & Siero, F.W. (1989). Modification of driving behavior in a large transport organization: a field experiment. *Journal of Applied Psychology*, 74, 417-423.

Vinokur, A., & Burnstein, E. (1978). Novel argumentation and attitude change: The case of polarization following group discussion. *European Journal of Social Psychology*, 8(3), 335-348.