Message framing effects on breastfeeding attitude: a functional measurement experiment

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Breastfeeding is generally accepted as the optimal method of infant feeding. However, many infants in the Netherlands are breastfed only for a short period. The present study aims to investigate the effect of framing breastfeeding-promoting messages in terms of the gains (advantages) associated with breastfeeding, compared with framing in terms of the losses (disadvantages) associated with the alternative behaviour, formula-feeding. The respondents, 96 women, took part in a web-based experiment, with statements of advantages of breastfeeding as well as disadvantages of formula-feeding as experimental stimuli. Stimuli were combined using a 4 (advantages) × 3 (disadvantages) full factorial within subjects design, with advantages presented as either 'benefits of breastfeeding' or 'disadvantages of formula-feeding' (between subjects). Women reported their attitude towards breastfeeding on a graphical rating scale after each presentation of a combination of arguments. Three clusters of response patterns could be distinguished. There was no overall effect of message framing on breastfeeding attitude. However, there was a significant interaction between framing and the presented advantages. Gain framed messages seem to yield a more positive attitude when low impact advantages are presented, whereas loss-framed messages were more effective in high impact health advantages. This effect was only present in the cluster of women who seem to take into account both information about advantages and disadvantages in a similar way. It can be concluded that the impact of message framing on the development of an attitude towards breastfeeding is limited and depends on the type of message presented and the information integration pattern followed by the respondent. Future breastfeeding promotion activities are recommended to be tailored based on specific characteristics of the target population, to optimally enhance breastfeeding attitude in each woman.

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Breastfeeding is generally accepted as the optimal method of infant feeding. The World Health Organization (WHO) recommends exclusive breastfeeding for 6 months and continued breastfeeding until 2 years of age along with complementary foods (Kramer & Kakuma, 2001). However, many infants in the Netherlands are breastfed only for a short period (Lanting, Van Wouwe, & Reijneveld, 2005). One month after birth, only half of the infants receive their mother's milk, and breastfeeding rates decline further to 15% at six months (Lanting, Van Wouwe, & Reijneveld, 2005). Promoting breastfeeding is, therefore, a major challenge to health care professionals in the Netherlands.

Knowledge of breastfeeding and attitude towards breastfeeding were found to be important predictors of the intention to breastfeed in several studies (Fairbrother & Stanger-Ross, 2010; Marrone, Vogeltanz-Holm, & Holm, 2008; Kools, Thijs, & De Vries, 2005). In an earlier functional measurement experiment, we studied the impact of several combinations of advantages and disadvantages of breastfeeding on the development of an attitude towards breastfeeding among Dutch and Flemish women of reproductive age (Van Acker & Bakker, 2012). In this study, as well as in the current study, attitude towards breastfeeding was defined as "an expression of favor or disfavor towards breastfeeding". One of the conclusions from this previous study was that the presentation of disadvantages of breastfeeding can have adverse effects on breastfeeding attitude and subsequent intention to breastfeed.

An important aspect of breastfeeding-promoting messages is the framing of these messages. Like other health-promoting messages, messages to promote breastfeeding can be formulated in different ways. The message can be framed in terms of the gains associated with healthy behaviour, or in terms of the losses associated with the alternative, unhealthy behaviour. This concept of message framing (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981; Rothman et al., 1993) is also applicable to the presentation of messages about infant feeding. To promote breastfeeding, one could opt to present benefits of breastfeeding (gain-framed message) or to present disadvantages of formula-feeding (loss-framed messages).

In the past decades, studies on the effects of framing persuasive messages (so-called 'goal-framing') showed inconsistent results as to which type of framing is more effective. A systematic review of Levin, Schneider and Gaeth (1998) suggested that loss-framed messages generally have a greater impact on behaviour than gain-framed messages. However, this study was not particularly focused on health behaviour. A Cochrane review

of Akl et al. (2011), focusing on health information messages, lead to the conclusion that goal framing only had little effect on health behaviour, with the loss-framed messages being more effective than the gain-framed messages.

In contrast, the recent meta-analytic review of Gallagher and Updegraff (2012) concluded that gain-framed messages were more effective than loss-framed messages in promoting prevention behaviours. These results are in line with the results of the earlier meta-analytic review of O'Keefe and Jensen (2007) who found a weak advantage for gain-framed messages over loss-framed messages on attitudes. However, this advantage appeared to be attributable to dental hygiene behaviour only; other preventive actions such as safer-sex behaviours, skin cancer prevention behaviours, or diet and nutrition behaviours revealed no significant differences between both types of message framing. So, the effect of message framing on the persuasiveness of the message seems to depend on the specific health behaviour addressed. The results of Gallagher and Updegraff (2012) also suggest the type of outcome matters: although they found an advantage for gain-framed messages compared to loss-framed messages in promoting actual health behaviour, this effect was not found when persuasion was assessed by attitude or intention only.

Another aspect that should be taken into account in this kind of research is the specific conditions under which a frame is most effective. The results of the study of Van 't Riet et al. (2008) showed that self-efficacy to quit smoking moderated the influence of gain- and loss-framed anti-smoking messages. Loss-framed communication was more persuasive for participants with high self-efficacy to quit smoking than a gain-framed communication or no communication. For participants with low self-efficacy to quit smoking, there was no difference in persuasiveness between the gain-framed, loss-framed and no-communication conditions. Werreij et al. (2011) found a moderating role of self-efficacy in the effectiveness of framing messages about consuming ecological meat. For participants high in self-efficacy, the gain-framed message resulted in consuming more ecological meat than the loss-framed message. In their most recent study, a gain-framed message resulted in more positive attitudes and intentions towards healthy eating than a loss-framed message for participants high in self-efficacy, whereas for participants low in self-efficacy, the loss framed message resulted in stronger intentions than the gain-framed message (Van 't Riet et al., 2013).

Furthermore, personal relevance has been suggested to play a role in the effect of message framing on persuasion (Van 't Riet, Ruiter, & de

Vries, 2012). Loss-framed information seemed to be mainly effective for those recipients who are already engaged in healthful behaviour (Van 't Riet, Ruiter, & de Vries, 2012).

The current study investigates the impact of message framing on the development of an attitude towards breastfeeding. The impact of personal factors such as self-efficacy, personal relevance and the attitude towards breastfeeding, prior to the experiment, will be tested as well.

METHOD

Participants. A total of 96 women took part in a Web-based experiment. The mean age of the participating women was 31.24 years (*SD* = 8.40) and 77.10% had completed some form of higher education.

Design and stimuli. Statements of advantages as well as disadvantages of breastfeeding were used as experimental stimuli in a Web-based experiment (within subjects manipulation). Advantages of breastfeeding were presented as either gain 'benefits of breastfeeding' or loss 'disadvantages of formula-feeding' (between subjects manipulation). Table 1 includes the statements used in the study. It is expected that the more 'practical' stimuli (items 1 and 2) have lower impact on breastfeeding attitude than the stimuli concerning health (items 3 and 4).

Stimuli were combined using a 4 (advantages breastfeeding) × 3 (disadvantages breastfeeding) full factorial design, plus additional one-factor subdesigns for both advantages and disadvantages (i.e., advantages presented in absence of a disadvantage). This was done to be able to discern an additive from an averaging integration pattern (Anderson, 1982). Each stimulus was composed of either an advantage, a disadvantage or a combination of both an advantage and a disadvantage. All combinations of stimuli were presented twice, resulting in a total of 38 stimulus presentations (4x3 plus 7 subdesigns, times 2 for the repetitions).

Procedure. Participants were recruited from the student population of the Open University, faculty of psychology, who are all adult students, of which many are studying for a second bachelor degree. First year students were invited to participate in a web-based experiment. Before taking part in the experiment, participants were required to provide some background information, such as demographic variables and their experiences with breastfeeding. The question 'how relevant is the subject breastfeeding for

you?' was used to measure personal relevance. Participants were randomized to either the gain-framed presentation of stimuli or the loss-framed presentation of stimuli.

Table 1. Stimuli for the experiment.

Item
Advantages of breastfeeding (gain-frame)
1 Breastfeeding is cheaper than formula feeding
2 Breastfeeding always has the right temperature
3 Breastfeeding protects against several kinds of cancer compared to formula-feeding
4 Breastfed children are less frequently ill as compared with formulafed children
Advantages of breastfeeding (loss-frame)
1 Formula feeding is more expensive than breastfeeding
2 Formula-feeding has to be heated to the right temperature
3 Formula-feeding increases the risk on several kinds of cancer compared to breastfeeding
4 Formulafed children are ill more often than breastfed children
Disadvantages of breastfeeding
1 When breastfeeding you need to watch what you eat and be careful with dieting
2 The father is less concerned with breastfeeding as compared with formula-feeding
3 When breastfeeding it is harder to know whether your baby had sufficient milk as compared with formula-feeding

Measures. Self-efficacy was measured with the translated breastfeeding self-efficacy scale (BSES; Dennis, 2003). With 14 items, self-efficacy in several situations is rated on a 7-point Likert-type rating scale (1 = not at all confident, 7 = always confident). Examples of items are: "I'm confident that I can determine that my baby is getting enough milk" or "I'm confident that I can comfortably breastfeed with my family members present."

After each stimulus presentation participants were asked to rate how they would judge breastfeeding based on the presented stimulus information. Attitude towards breastfeeding was measured with the item "How would you rate breastfeeding at this moment?", scored on a 7-point Likert-type rating scale, with 1 being "very negative" and 7 being "very positive".

RESULTS

Based on a previous study (Van Acker & Bakker, 2012), it was expected that distinct patterns would be discernable in the data. Therefore, in a first step, single subjects analyses were performed to detect possible patterns. Single subjects analyses yielded three distinct patterns. We used a two-step cluster analysis to empirically determine the optimal number of clusters based on the response patterns. For all stimuli to have an equal weight in determining cluster membership, we standardized all ratings per individual and per factor. Although all items were measured on the same response scale, differences in weighting might occur because of differences in the use of the response scale per individual or per stimulus. Based on Schwarz Bayesian Criterion, the optimal number of clusters was three. Next we proceeded using the clustering method proposed by Hofmans and Mullet (2013) to provide an optimal clustering solution of each case. Using K-means clustering (with k = 3 as suggested by the single subject analysis and the two-step procedure) on the scale values, we obtained three different sets of participants (named clusters in the remainder of the text). In the subsequent analyses we control for cluster differences by taking into account cluster membership.

Next, the data were analysed by means of repeated measures ANOVA with advantages and disadvantages as well as repetition as within subjects factors, and cluster membership as well as framing condition as between subjects factors. Greenhouse-Geisser corrections were applied when sphericity could not be assumed.

Table 2 shows the relevant ANOVA output for the first model. The results show that the manipulation of framing had no main effect on breastfeeding attitude: mean ratings did not differ on average between the gain and loss frame conditions. The results do show however that the framing effect differed depending on the advantage that was presented. Therefore, we present the mean ratings for the gain and loss framed condition per advantage in Figure 1.

Table 2. Results of the ANOVA including cluster membership as a between subjects factor.

| Effect	df_{effect}	df_{error}	F	p	η^2
advantages	2.02	181.53	73.35	.00	.45
disadvantages	2.38	214.20	70.06	.00	.44
advantages×disadvantages	6.52	586.90	1.83	.09	.02
advantages×cluster	4.03	181.53	25.04	.00	.36
disadvantages×cluster	4.76	214.20	10.64	.00	.19
advantages×disadvantages×cluster	13.04	586.90	1.43	.14	.02
cluster	2	90	136.74	.00	.75
advantages×framing	2.02	8.18	4.03	.02	.04
disadvantages×framing	2.38	214.20	2.42	.08	.03
advantages×framing×cluster	4.03	181.53	3.47	.01	.07
disadvantages×framing×cluster	4.76	214.20	.28	.92	.01
framing	1	90	.089	.77	.00
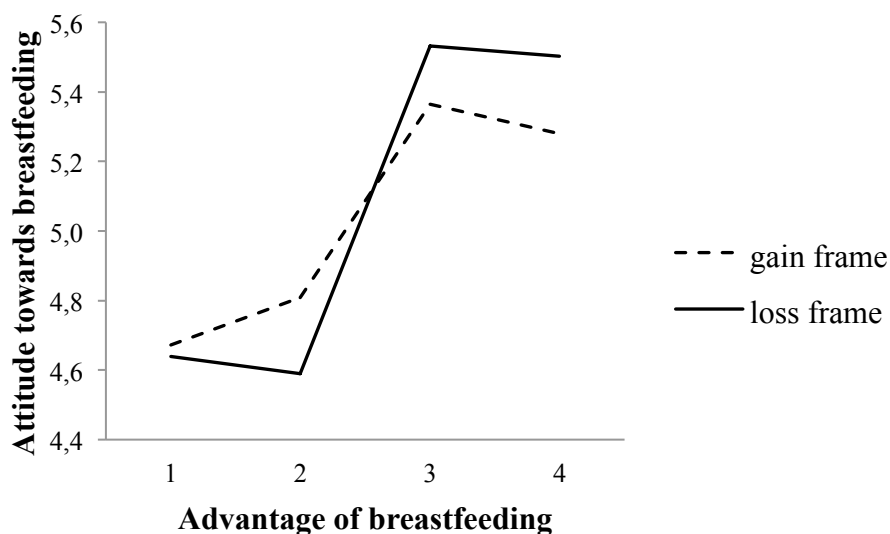
Figure 1. Mean ratings for attitude towards breastfeeding for the four advantages (1 cheaper; 2 right temperature; 3 protection against cancer; 4 children less frequently ill) per framing condition, with loss framed messages formulated opposite to gain framed messages (e.g. formula feeding more expensive than breastfeeding).

Figure 1 shows that the differences between gain and loss framed messages actually depend on which advantage is presented. The impact of framing on advantage three and four (both health advantages) is larger than the impact on advantages one and two. Post hoc analyses were therefore performed to test whether differences between gain and loss framed messages were significant per advantage. None of these differences were statistically significant (all p's > .05).

Table 2 also shows that the frame×advantage interaction is different for each cluster (i.e., there is a framing×cluster×advantage interaction). We can observe this difference in Figure 2. The figure clearly shows that the difference between gain and loss framed messages is only apparent for cluster one. Clusters two and three do not show any effects of framing and moreover, these effects are relatively similar for each advantage. The pattern of averages in cluster one resembles the one shown in Figure 2, indicating that cluster one seems mainly responsible for the differences in framing effects. Post hoc analyses were performed to confirm this finding. For the women who belonged to cluster one a significant main effect of framing was found for advantage 3 ($F(1, 26) = 7.03, p = .013, \eta_p^2 = .21$) and advantage 4 ($F(1, 26) = 25.31, p < .001, \eta_p^2 = .49$) but not for advantage 1 ($F(1, 26) = .68, p = .42, \eta_p^2 = .03$) or 2 ($F(1, 26) = 2.89, p = .101, \eta_p^2 = .10$). None of the other clusters showed any significant framing effects.

Next, three additional analyses were performed to test the possible moderation of self-efficacy, relevance and prior attitude on the relationship between message framing and attitude. In the first analysis, a dichotomous variable indicating high or low breastfeeding self-efficacy was added to the model yielding no significant framing×self-efficacy interaction ($F(1, 85) = .04, p = .85$). The second analysis including a factor indicating high versus low relevance showed no interaction with framing either ($F(1, 84) = .05, p = .83$). Similar results were found for prior attitude ($F(1, 84) = .02, p = .88$).

As the results showed that the framing effect was different for some clusters and as previous research that also discerned several clusters based on the integration rule (Van Acker & Bakker, 2012) showed that these clusters reflect important differences in women that may moreover be related to other relevant variables, we conducted additional exploratory analyses in order to describe the clusters and to relate them to other variables in our study. The results of these analyses are presented in Table 3, Table 4 and Figure 3.
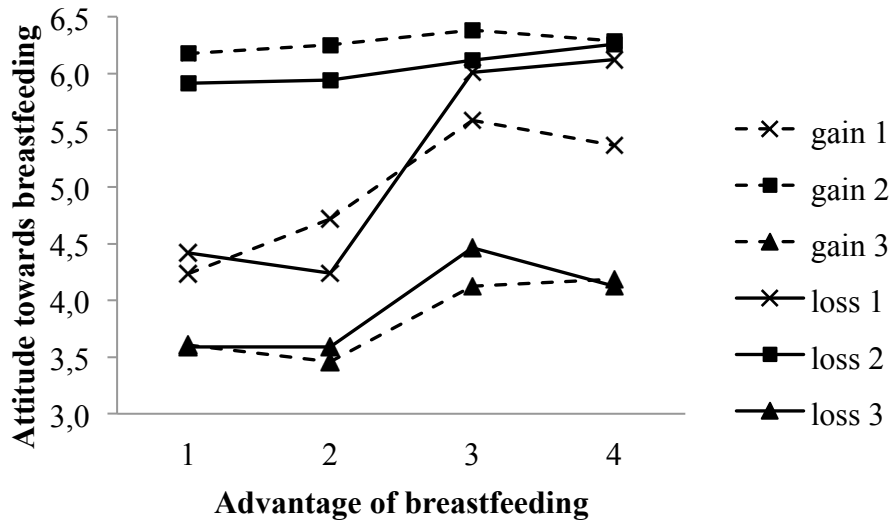
Figure 2. Mean rating of attitude towards breastfeeding for the four advantages (1 cheaper; 2 right temperature; 3 protection against cancer; 4 children less frequently ill) per framing condition. Ratings are furthermore grouped per cluster (with cluster 1: moderate positive attitude towards breastfeeding prior to study; cluster 2: positive attitude prior to study; cluster 3: less positive attitude prior to study) and are presented for the gain framed as well as the loss framed condition. (Gain 1 thus stands for gain framed condition cluster 1.)

The three clusters did not differ in mean age or number of children. Relevance and previous breastfeeding experiences were not related to cluster either. ANOVA did indicate that there were differences between the clusters regarding attitude prior to the experiment as well as BSES scores. The results from these ANOVA's are presented in Table 3. BSES scores as well as prior attitude scores are lower for cluster three. LSD post hoc tests revealed that differences between cluster 1 and 2 were not significant.

Although an additive integration pattern was found in all three clusters (see Figure 3), Table 4 shows that the three clusters differ significantly in the way the presented advantages and disadvantages impact on women's attitude towards breastfeeding. Cluster one shows a large main effect for advantages as well as disadvantages. The main effect of framing is not significant, however, as mentioned before based on the advantages×framing interaction it can be concluded that framing effects

differ depending on the advantage that is being considered. Cluster 2 shows small but significant main effects of advantages as well as disadvantages. Figure 3 also shows that, on average, all stimulus combinations were rated rather positively in this cluster. Finally, cluster 3 is characterized by a medium main effect for advantages and a medium effect for disadvantages when one takes into account the uncombined level, however, when the 3×4 subdesign is analysed, the main effect of disadvantages disappears (these results are not presented for conciseness). This can also be observed in Figure 3.

Table 3. Comparison of characteristics of the three clusters.

Variable	$M_{cluster1}$	$M_{cluster2}$	$M_{cluster3}$	$F(2, 93)$	p	η^2
Age	31.11	31.93	28.62	.82	.444	.02
Number of children	1.00	0.89	0.23	2.45	.092	.05
Relevance	5.79	4.91	6.08	2.83	.064	.06
Breastfeeding experience	2.25	1.75	1.85	1.00	.374	.02
BSES	3.96	4.45	2.47	11.58	< .001	.20
Attitude towards breastfeeding prior to the study	4.36	5.18	2.85	20.54	< .001	.31

DISCUSSION

This study investigated the impact of message framing on the development of an attitude towards breastfeeding. Overall, there was no effect of framing on breastfeeding attitude. However, there was a significant interaction between framing and the presented advantages, implying that the differences between gain and loss framed messages depend on which advantage is presented. Gain framed messages seem to yield a more positive attitude when low impact advantages are presented, whereas loss-framed messages were more effective in high impact advantages. These results shed a new light on the literature in this field, showing inconsistent results as to which type of framing is more effective (Levin, Schneider, & Gaeth, 1998; Akl et al., 2011; Gallagher & Updegraff, 2012; O'Keefe & Jensen, 2007). Apparently, the effect of message framing not only depends on the specific health behaviour addressed (O'Keefe & Jensen, 2007) and the type of outcome (Gallagher & Updegraff, 2012), but is also influenced by the specific arguments used in health-promoting messages. Functional

measurement allowed us to study the contribution of individual arguments in the process of decision-making, thereby revealing this unexpected interaction.

Table 4. ANOVA results per cluster.

| Effect	df_{effect}	df_{error}	F	p	η^2
Cluster 1 ($N = 28$) Moderate positive attitude prior to study					
advantages	2.09	54.26	74.65	.00	.74
disadvantages	2.35	61.16	52.54	.00	.67
advantages×disadvantages	1.45	146.35	1.67	.14	.06
advantages×framing	2.09	61.16	21.59	.00	.24
disadvantages×framing	2.35	146.35	.58	.59	.02
framing	1	26	2.59	.12	.09
Cluster 2 ($N = 35$) Positive attitude prior to study					
advantages	1.59	84.49	5.19	.01	.09
disadvantages	2.31	122.41	28.96	.00	.24
advantages×disadvantages	5.49	291.08	2.36	.04	.04
advantages×framing	1.59	84.49	1.64	.20	.03
disadvantages×framing	2.31	122.41	2.36	.09	.04
framing	1	53	2.19	.15	.04
Cluster 3 ($N = 13$) Less positive attitude prior to study					
advantages	1.97	21.68	8.84	.00	.45
disadvantages	1.59	45.77	15.57	.00	.59
advantages×disadvantages	4.03	44.34	1.03	.40	.09
advantages×framing	1.97	21.68	.48	.63	.04
disadvantages×framing	1.59	45.77	.74	.46	.06
framing	1	11	.20	.66	.02
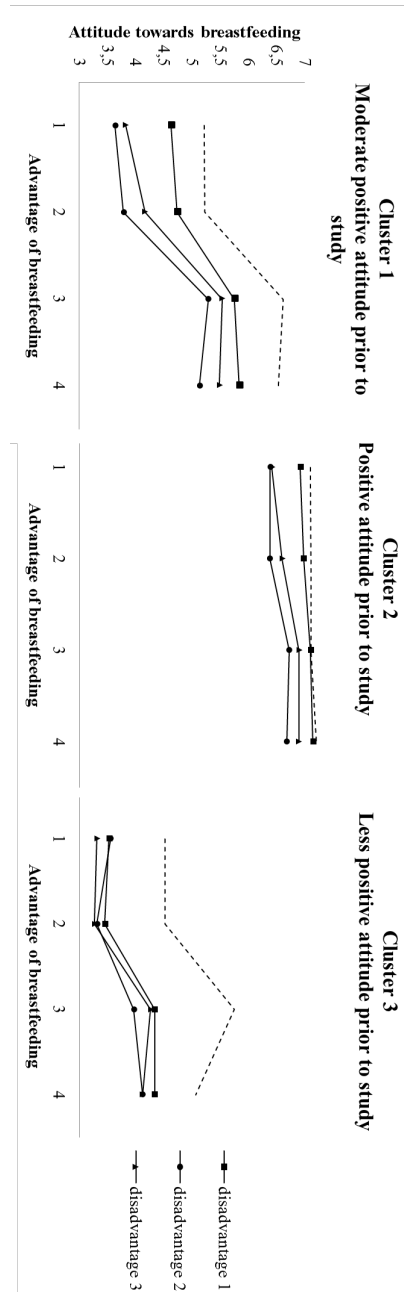
Figure 3. Mean ratings of attitude towards breastfeeding per cluster for the combinations of advantages (1 cheaper; 2 right temperature; 3 protection against cancer; 4 children less frequently ill) and disadvantages (1 careful with dieting; 2 father less concerned; 3 sufficient milk).

Self-efficacy has been suggested to moderate the influence of gain- and loss-framed messages in several studies (Van 't Riet et al. 2008, 2013; Werreij et al., 2011). However, this moderating effect was not found in the present study. A possible explanation for this inconsistency in results is the outcome measures used: in our study attitude towards breastfeeding was measured, whereas previous studies focused on smoking cessation (Van 't Riet et al., 2008), healthy eating in fast-food restaurants (Van 't Riet et al., 2013) and consumption of ecological meat (Werreij et al., 2011).

Another factor suggested to play a role in the effect of message framing on persuasion is personal relevance (Van 't Riet, Ruiter, & de Vries, 2012). In the present study, this factor did not play a role, neither did prior breastfeeding attitude. However, the interaction between message framing and the presented advantages was different for respondents with different response patterns. With single subject analyses three clusters of response patterns could be distinguished, comparable with the patterns found in a previous study (Van Acker & Bakker, 2012). Only in cluster one, representing respondents who seem to take into account both information about advantages and disadvantages in a similar way, framing effects were different for the four presented advantages. In the clusters two and three, message framing did not play a role. In these clusters, the presented advantages and disadvantages seemed to have less impact on the attitude towards breastfeeding as compared with cluster one. Respondents in cluster one integrate information about both advantages and disadvantages, whereas respondents from cluster two overall show a very high attitude towards breastfeeding regardless of the presented advantages and disadvantages. In cluster three, the respondents' attitude was moderately affected by both advantages and disadvantages, however, the effect of disadvantages could be explained by whether or not disadvantages were presented. So, the presentation of disadvantages in itself already yields a less positive attitude towards breastfeeding in this cluster.

As this study replicated the clusters found by Van Acker & Bakker (2012), we deemed it interesting to identify variables that are related to these clusters. The three clusters differed significantly in attitude towards breastfeeding prior to the experiment. Respondents from cluster two had a very positive attitude towards breastfeeding prior to the experiment, while respondents from cluster three had a less positive prior attitude. In both clusters, the presented advantages and disadvantages had less impact on the breastfeeding attitude than in cluster one, where respondents showed a moderate positive prior attitude. Presumably, the attitude of the respondents in clusters two and three was already strongly formed prior to the study, whereas respondents in cluster one based their rating of breastfeeding on the

presented advantages and disadvantages. This confirms the idea that stronger attitudes are more stable over time than weak attitudes, as was found in previous research on attitude formation (Holland, Verplanken, & van Knippenberg, 2002). Unfortunately, in the current study, we only measured the rating of breastfeeding itself, not the strength and solidity of the respondent's attitude towards breastfeeding, so we cannot confirm this idea with the current data.

The three clusters not only differed in attitude towards breastfeeding prior to the experiment, but also in breastfeeding self-efficacy. Respondents with the most positive prior attitude also revealed the highest self-efficacy, whereas respondents with a less positive prior attitude displayed lower self-efficacy as well. From these findings we can conclude that individual differences should be taken into account when developing breastfeeding promotion interventions.

With respect to the advantages and disadvantages themselves, the health advantage for the mother (protection against several kinds of cancer) had the highest impact on the women's rating of breastfeeding, followed by the health advantage for the child (breastfed children are less frequently ill). As for the disadvantages, the involvement of the father with breastfeeding yielded the most negative responses in all clusters, followed by the uncertainty with regard to the amount of milk a baby has consumed. Message framing effects, present in cluster one, were only found for the health advantages, with loss-framed messages being more effective.

In conclusion, the impact of message framing on the development of an attitude towards breastfeeding seems to be limited and dependent on the type of message presented and the information integration pattern followed by the respondent.

Limitations

From the results of this study we have learned that the type of advantage and the way it is formulated does matter. This is also a limitation of the study: in planning the study four advantages are chosen from all possible advantages to present. Other advantages may have yielded other results, which future studies will point out. As some other studies based on the Information Integration Theory, this study too risks having a rather poor external validity. The question is whether in this kind of web-based survey experiment we actually measure the development of an attitude towards breastfeeding, or rather some kind of response bias. The participants were asked to rate how they would judge breastfeeding immediately after each stimulus presentation. Although these ratings vary according to the

presented stimulus information, they may not really measure the long-term and more stable "overall" attitude towards breastfeeding. If attitudes are seen as rather stable views or opinions that do not change fundamentally, the question is whether attitudes can be altered by manipulating information that may add to one's evaluation of the attitude object, e.g. breastfeeding. Only when attitudes have not yet been formed, this information may have a real influence on attitude development. In this way there may be a significant difference between cluster one which is assumed to comprise participants who had no clear attitude on breastfeeding prior to the study, and those in clusters two and three. Longitudinal study on attitude development in the longer term among women with no clear prior attitude towards breastfeeding is recommended.

Another limitation is the origin of the data: the results are based on data from a convenience sample of Dutch and Flemish women of all ages, recruited among psychology students of the Open University in the Netherlands. Since the mean age of the participating students (31,2 years) is higher than that of first year students of other universities, the participants may have more 'developed' attitudes towards breastfeeding prior to the study. Although on average in the reproductive age, the participating women were not particularly planning to become pregnant. This could have had consequences for the personal relevance and the strength of their attitude towards breastfeeding prior to the study. Replication of this study in a more representative group of women is necessary to generalize these results, preferably in women who are (planning to become) pregnant.

In this study no moderation of self-efficacy, relevance and prior attitude on the relationship between message framing and attitude was found, although the three clusters differed from each other in prior attitude and breastfeeding self-efficacy. Including other variables in the analyses might yield different results.

Practical implications and future research

More research is necessary to draw conclusions about the most effective way to frame messages to promote breastfeeding. Our results suggest that message framing may have an effect in the presentation of advantages, with loss-framed messages yielding a more positive attitude towards breastfeeding when high impact health advantages are presented. The presentation of disadvantages of breastfeeding can have adverse effects on breastfeeding attitude and subsequent intention to breastfeed. Future studies should reveal what arguments are most effective in enhancing breastfeeding attitude. In these studies, it should be kept in mind that the

current study focusses on the short term effects of information framing, whereas in practice one can expect that rather long term effects would matter. Longitudinal research among women who are about to take a decision on how to feed their baby is recommended to shed light on this issue.

Like in our previous study, three clusters of response patterns could be distinguished (Van Acker & Bakker, 2012), suggesting some women are similarly influenced by advantages as well as disadvantages of breastfeeding when forming an attitude, while others' attitude is less influenced by the presented arguments. In particular, women with a strong prior attitude towards breastfeeding seem to use less information from the presented advantages and disadvantages. Breastfeeding promotion interventions should take into account these individual differences in interpretation of the stimuli, which is in line with the person centred approach of attitude formation according to Anderson (2009).

Future studies should address the relation of the integration patterns with other variables, to allow prediction of the used integration patterns by other individual characteristics. Special attention should be given to women who are (planning to become) pregnant, because these women are about to take a decision on their preferred infant feeding method. With this information, future breastfeeding promotion activities can be tailored based on specific characteristics of the target population, to optimally enhance breastfeeding attitude in each woman, so more women keep breastfeeding their babies past the first few months.

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