Nudging Raters towards Feedback: Effects of Regulatory Focus and Idea Partitioning on Rater's Attendance on and their Tendency to Follow Feedback Information in Idea Selection

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Abstract

In idea selection, raters can attend and rely on information from multiple sources to determine which ideas are worthy for further consideration. Since that information can include feedback from external sources (e.g. number of likes from a community), it has the potential to act as anchor cues that impact decision making. Up to now, little is known about the susceptibility of raters to such information depends on individual's motivational orientation (regulatory focus) as well as on the number of ideas presented simultaneously per subset. Using eye-tracking methods, findings show that anchoring-effect is less salient when raters were primed to prevention focus, although they searched more extensively for feedback information than their counterparts with promotion focus. Moreover, reducing the number of presented ideas per subset in prevention focus further decreased susceptibility to anchor cues.

1. Introduction

Innovation contests have become a popular way to find exceptional ideas and establish new ways to innovate and create value in companies [1, 2]. However, such idea competitions involve a variety of challenges [3] that require raters to be careful not to "kill the wrong ones" [4] as the uncertainty linked to such creativity contexts does not allow the application of typical problem solving models [5]. Following, there is no numerical decision rule or mathematical way to derive the best submissions, which might be the case in other contexts [6]. During idea selection, raters can attend and rely on information from different sources [7]. Although the essence of a submission is expressed through the ideator's idea description, ideas often come with additional (feedback) information that might influence whether they get selected or not [8]. For example, a community can express their appreciation about an idea through the number of likes, which has been found to be a good predictor of implementation success [7]. Although classic theories in economics, philosophy, social science, psychology etc. assume humans to be rational [9], the provision of such feedback information has the potential to impact their decisions [10]. This kind of impact that is evoked by following the estimates of previous decision makers is referred to as anchoring-effect in literature [11]. In general, these influences on the tenets of logic and probability are also described as cognitive biases [9] and arise from the application of fast but fallible cognitive strategies known as heuristics [11]. Heuristics are originally grounded in the model of rational choice, which assumes that decisions emerge through the process of dynamic adaptations to external (environmental) and internal (human characteristics) factors [12]. Although the anchoring-effect is one of the most intensively examined behavioral biases [13], little is known about the role of motivation or personality traits on this phenomenon in the context of idea selection. For example, regulatory focus [14] as a basic driver of attitudes and behaviors is a motivational orientation that influences information processing behavior [15, 16, 17], which has also the ability to direct people's attention to information that fits their regulatory orientation [18]. In this sense, receiving a recommendation regarding an option in a choice task might put the focus on that option and can bias information processing [19, 20]. Applied to the context of idea selection, the regulatory focus should thus also affect the susceptibility to available feedback information, which lacks empirical evidence so far.

In terms of environmental factors, incorporating feedback information in decision making is a common behavior of individuals to handle complexity [21]. Due to cognitive limitations, individuals act in boundedly rational ways [12] that make them vulnerable to biases or heuristics during decision making [11]. Based on the knowledge from the research field of choice architecture, the efficient design of decision situations can help to overcome such irrational decision biases [22]. For example, IT design elements that allow the partitioning of the entire choice set into subsets that

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contain different number of options may have the potential to vary task complexity. Despite the fact that previous studies unveiled a relationship between the number of options and task complexity, which has also been identified as a driver of anchoring-effects [23], little is known about the impact of such a design element in the context of idea selection. Thus, identifying factors that influence individuals' susceptibility to anchor cues is essential to enhance understanding of underlying mechanisms [24]. By building on prior research [25], this research investigates information-search behavior under different regulatory foci as well as subset sizes and examines the effect of both factors on the tendency to follow feedback information. To the author's best knowledge, past research hardly explored those effects in the context of idea selection tasks. Hence, the research question is: *How do regulatory focus and idea partitioning affect rater's attendance on and their tendency to follow feedback information?*

2. Background

2.1. Idea feedback information and anchoring

To deal with uncertain and complex situations, individuals apply cognitively traceable decision strategies, also known as heuristics, that reduce complex inference tasks to relatively simple cognitive operations [11]. While these "mental shortcuts" can help individuals to cope with such situations, they also have the potential to lead to systematically skewed results [26]. As one of the most studied cognitive biases, prior research [11] investigated the effect of anchor values on decision-making and demonstrated their influence on outcomes. The authors describe this mechanism as anchoring-effect, which can be defined as the disproportionate influence of initially presented values on the decision maker's behavior. Although anchoring is well studied in several domains like general knowledge [27], probability estimation [28] or expert ratings [23], this phenomenon got little attention in the context of idea selection. When selecting ideas, raters typically have to decide what ideas are worthy for further consideration [29]. To do so, raters need to sift through different kind of information. Beside the idea description, describing the essence of an idea, raters can rely on a variety of additional information which can be classified into three sources [30]: Content-based information, which creates feedback related to the content of a submission (e.g. based on idea descriptions) may be enabled by recent developments in text-mining. For example, [31] developed a text-mining algorithm that allows to determine the novelty and familiarity of an idea based on the textual description represented in a single score. Another source for feedback can be related to the contributor of the idea itself. In this sense, research has found that an ideator's prior success is an indicator of idea quality, since some individuals generate better ideas than others and tend to persist in producing ideas of higher quality [2]. Finally, crowd-based information such as the number of likes (commonly referred to as the "wisdom of crowd" [32]) expresses a community's opinion or appreciation about ideas on the platform. Hence, all those information sources provide feedback in form of previous decisions and have the potential to impact subsequent decision making [10] if raters incorporate the estimates into their own decision making [33]. Given the limited research about effects of providing feedback information in idea selection tasks, it remains unclear which factors impact susceptibility to them in this domain.

2.2. Regulatory focus

Since not all individuals may be equally receptive to anchor cues [24], the susceptibility to them depends on individual differences [34]. In this sense, related research [35] suggest that the extent of anchoring might be embedded in different thinking styles, which are driven by motivation. For example, from a psychological perspective, individual's motivational orientation in decision making can be described by two self-regulatory systems [14]: With a *promotion focus*, individuals are sensitive to positive outcomes and strive for advancement and aspirations while preferring strategies to accomplish hits and avoid errors of omission. As an example, related literature [36] discovered that a promotion focus state encourages individuals to search for as many new strategies as possible to solve a creative problem, even if that does not imply solely finding the most appropriate ones. Moreover, research in comparative advertising highlights that promotion focused individuals express higher evaluations towards brands that were framed in a positive way [37]. That is in line with literature that argues promotion focused individuals are more likely to focus on positive signals of available options [38] that might result from the sensitivity to gain-related information [14]. Applied to the context of idea selection, such positive or gain related information might involve feedback information coming, for example, from a community. Following, a high number of likes could be an indicator for a gain related signal for individuals with a promotion focus. As the promotion focus of individuals encourages a more risk-taking behavior, research demonstrated that it can result in the adoption of heuristics in decision making [16]. Hence, promotion focused individuals tend to elaborate information on an abstract level that focuses more on commonalities and relationships [17]. In this sense,

literature found a more global processing of visual stimuli for individuals in promotion focus [15], which could be described by a shallower or more holistic processing of information. In contrast, individuals with a *prevention focus* are sensitive to negative outcomes that motivates them to apply vigilant decision strategies to ensure correct rejections and avoid false alarms [14, 39]. Hence, the risk-aversion of prevention focused individuals facilitates the inclusion of substantive information in decision making [16]. As a result, prevention focused individuals evaluate situations more carefully, precisely, and in a detailed fashion to avoid undesirable end states [17, 40]. This is why prevention focused individuals show more concrete processing on an item-specific level of independent aspects [17]. Prevention focused individuals try to fulfill their duties and obligations to accomplish needs for safety and security [14]. In this sense, prevention focused primed individuals are less creative in problem solving [40] and endorse fewer alternative hypotheses than their counterparts in promotion focus [41]. Consequently, they should also be less prone to imitate feedback information. Although the regulatory focus was shown to influence information processing behavior in the context of consumer decisions [42] or in managerial decision making [43], its role for processing feedback information in the context of idea selection has been strongly neglected in literature so far. In this context, research has been conducted on its effect combined with self-affirmation and manipulations of mood on selection performance [44], but it still remains unclear to what extent raters pay attention to potentially anchor cues and how the motivational orientation affects susceptibility to them.

2.3. Idea partitioning in subsets

The process of dynamic adaptations induced by heuristics such as anchoring can be influenced not only by human characteristics, but also through environmental factors [12]. Depending on the characteristics of the choice environment, previous studies (e.g. [45, 46, 47, 48]) showed adaptations in the applied decision strategy that can be explained by the adaptive decision maker theory [49]. This theory supports the assumption that preferences are not necessarily derived by applying an invariant algorithm taken from a master list in memory, instead people use a variety of approaches that are highly sensitive to the local problem structure [50]. Applied to context of choice architectures, [51] states that the way choices are presented influences the choices made by decision makers. In this sense, related literature discussed the impact of partitioning choice sets by grouping options into categories of similar concepts [51]. For example, research demonstrated that design elements which present similar ideas in subsets, influenced perceived cognitive load during idea selection [52] that in turn was found to have an impact on the anchoring-effect through changes in the adjustments towards an anchor value [9]. However, prior research [51] ignored that choice sets may not only be partitioned to form categories, but also to generate subsets of different sizes without categorizing options according certain concepts. In this case, IT-tools allow to partition the whole choice set into subsets with a certain number of simultaneous presented options. Since research unrelated to idea selection have found adjustments in information-search behavior as a function of the number of alternatives in the choice set [53, 54], partitioning the choice set into subsets might induce similar effects. For example, literature [53, 55] stated that decision makers searched a smaller amount of information, when faced with higher task complexity resulting from an increase in the number of options. In particular, it is common for individuals to seek (feedback) information to include it in their decision making for reducing complexity [21]. For example, related research [23] demonstrated that anchoring-effects of expert ratings on crowd evaluations are contingent on task complexity. Hence, depending on the complexity of a task, [54, 56, 57] showed that individuals use different information strategies. In this sense, individuals tend to use full processing strategies when task complexity is low, whereas tasks with higher complexity induce a reduced processing strategy to decrease cognitive effort. Applied to the context of idea selection, variations in the task complexity that might be induced by varying the number of options per subset should lead to similar effects on the susceptibility to feedback information. Nevertheless, little is known about those effects of different subset sizes in the described domain. Hence, as there is no neutral way to present choices [58], further investigations of such a design element that partitions the choice set into subsets are needed.

3. Hypotheses development

Depending on the regulatory focus, individuals differ in their information processing behavior [15, 16, 17]. In contrast to the prevention focus induced behavior to prevent making errors, individuals with a promotion focus accept errors instead of missing out opportunities [39]. Given that the regulatory focus influences the salience and perceived value of different types of information [43], it can direct individuals' attention to information that fits their regulatory orientation [18]. As promotion focus encourages individuals to focus more on positive signals of available options [15], it enhances sensitivity to gain related information [14]. Transferred

to the context of idea selection, gain related information can be comprised from content-, contributor- and crowd-based information [30], whereas individuals with a promotion focus are particularly receptive to the positive aspects of feedback from the environment [59]. For example, the number of likes, which has been found to be an indicator for a successful implementation [7] might represent gain related information in the current context. Hence, in order to assure success and avoid oversights [39], raters with a promotion focus might be more susceptible to such positive signals of gain related feedback information. Since ideas with higher appreciations from external sources might represent positive signs for success, raters should show a higher willingness to confirm these external estimations. Consequently, individuals with a promotion focus should induce a higher tendency to follow gain related feedback information: *H1a) Raters primed to promotion focus have a higher tendency to follow feedback information than raters primed to prevention focus.*

The broadened, riskier information processing style of promotion focused individuals [40] is characterized by a global processing of visual stimuli, while dominant local processing was found for individuals in prevention focus [15]. In this sense, promotion focus should be related to a lower amount of information searched, whereas the risk-aversion of prevention focus facilitates the use of substantive information in decision making [16]. Therefore, the extent of information searched of individuals with a promotion focus should be lower, since the eager approach [17] enforces a more holistic or shallower processing of information at a higher level of abstraction [17]. Conversely, individuals in prevention focus should apply a more thoroughly processing of information, indicated by a more extensive search for feedback information: *H1b) Raters primed to promotion focus attend less feedback information than raters primed to prevention focus.*

*P*revious research associated higher task complexity with increased susceptibility to the anchoring-effect. For example, [60] showed that higher task complexity, induced with higher levels of cognitive load, created a greater anchoring-effect as individuals are less likely to search and use related knowledge in memory. Hence, participants under high cognitive load are more likely to treat the anchor as a cue to make reasonable judgments [61]. Thus, as result of high information load through presenting more ideas per subset, raters may ignore less important secondary attributes and focus their attention on more important primary attributes [62]. In this case, feedback information containing evaluations from previous decision makers (e.g. crowd) might act as mental shortcuts for reducing complexity. Applied to the context of idea selection, with more ideas presented in larger subsets, raters should adapt to the higher task complexity [48] and apply less elaborated strategies [45, 53, 55, 63] by considering anchors as cues for simplification: *H2a) Raters presented with more ideas per subset have a higher tendency to follow feedback information than raters presented with fewer ideas per subset.*

Since the required cognitive effort to make a choice rises with an increasing number of options [47, 64], decision makers ought to switch to a less effortful information search as a result of cognitive restrictions [45, 53, 55, 63]. According to adaptive decision making theory, when facing decision makers with high information load, information search becomes less systematic, highly selective (in terms of reducing the amount of information searched) and raters start ignoring large amounts of available information to avoid exceeding cognitive processing capacity [63, 65]. Given that more options and attributes lead to higher information load [63, 66], participants' search strategy becomes less systematic and less exhaustive as attributes get ignored. Hence, presenting ideas in larger or smaller subsets should evoke similar effects on information processing behavior. In line with past research, showing that increasing information load will decrease attention on attributes [63, 66, 67], presenting more ideas in larger subsets should lead to a lower attendance on feedback information. Vice versa, a smaller number of ideas presented per subset enables to process information in a more extensive manner: *H2b) Raters presented with more ideas per subset attend less feedback information than raters presented with fewer ideas per subset.*

4. Method

For investigating the proposed hypotheses, this research utilized a laboratory experiment using eye-tracking methods and surveys. The data set is based on the extended sample of a prior experiment [25] that comprised an idea selection task, where participants had to select the most promising ideas out of a choice set of in total 32 ideas. The ideas were gathered from a real online idea competition ("OpenIDEO") about gratitude at the workplace that did not require specific technical or domain knowledge. Since the same ideas were used as in the prior experiment, the set ensured a distribution of about 30% good ideas in order to mirror a real-world scenario [68]. For more details about the stratification, please refer to [25].

4.1. Treatment and experimental procedure

The design of the experimental platform (see also [25]) is similar to the design of real-world innovation

platforms that offer information about the content of the ideas (idea descriptions) as well as additional feedback information such as the number of likes. In the treatments, the regulatory focus (promotion vs. prevention focus) as well as subset size (two vs. four ideas per screen) were manipulated. One group saw in total 16 screens with two ideas on each, whereas the other group saw 8 screens with four ideas on each in a computerized random order. The regulatory focus priming was applied by the procedure of [42] for motivating participants to either find the best ideas (promotion focus) or to prevent bad ideas to be declared as good ones (prevention focus). The procedure involved a combination of two traditionally priming techniques (for more details see [25]). The data was recorded by a desktop mounted Tobii Pro X3-120 eye-tracker with a sample rate of 120 Hz and surveys. The stimuli were presented on a 24-inch screen with a resolution of 1920x1080. Each participant performed an automatic 5-point calibration prior to the task. Non-overlapping Areas of Interests (AOIs) for each of the sub-attributes of *"idea feedback information"*, which are historical idea score (past success of the contributor), number of likes and creativity score (text mining score for creativity of idea description [35]) were defined to track gazes by counting fixations and ensured an error margin of 0.5 degree. For preprocessing the eye-tracking data, the manufacturer's software (Tobii Studio 3.4.8) and built-in I-VT fixation filters with default parameters were used [69]. The sample contained 63 unique data sets, which were gathered in two rounds (31 cases from May to July 2018 and 32 cases from March to April 2019). The participants gained for a master degree at an European university and received class credits for participation. From the 63 data sets, in total 4 cases had to be excluded due to measurement errors or inattentiveness of the participants to the task. In three cases, an incorrect calibration caused a shift of the entire eye-movement patterns. Another case was excluded due to insufficient processing time of the priming procedure (below 1 minute and therefore substantially less than the proposed 5 minutes) as well as the duration of the selection task (11.1s vs. a mean of 34.5s per idea for the rest of the participants). Subsequently, the final analysis contained 59 participants (19 females and 40 males; mean age = 25.17, SD = 1.895), 9 of whom had already contest experience and 35 of whom were working alongside their studies. In total 9 participants wore glasses, which had no negative consequences for data collection as cleaning cloths were provided. Furthermore, no participant reported any problems about vision in the post-experiment feedback session. Since the stimuli was presented in black and white, color blindness did not play a role. A computerized random number generator ensured the randomized allocation of the participants to one of the experimental groups.

4.2. Measures about idea feedback information

The idea feedback information comprised information from a community, about the ideator itself as well as from a text mining algorithm. Information coming from the community included the number of likes the community provided to each idea. In the experiment, the original values of the OpenIDEO-platform, ranging from 1 to 20 (mean of 5.84) were used. The historical idea scores (his) comprised information about the contributor and represented the original past appreciation of the ideator on the OpenIDEO-platform (e.g. sharing an idea, adding a post or an evaluation of others' ideas) and ranged from 11 to 101 (mean of 35.66). For the machine-generated idea feedback, a text-mining algorithm [31] was applied to the idea description that assessed the creativity of the contribution within a range of -1 to 1, suggesting that the value for most creative ideas is close to zero. That machine generated creativity score span from 0.13 to 0.36 (mean of 0.242) in the experiment. As the creativity score (cs) was positive for all ideas in the experiment, the value was recoded by inverting the score (1 minus original score) and ranged afterwards from 0.64 to 0.87 (mean of 0.758) to ensure better comparability of the individual feedback values. Thus, all attribute values could be interpreted in the same direction. All three feedback information attributes combined represent the idea feedback information in the current work.

4.2.1. Tendency to follow idea feedback information (TFIFI): The tendency to follow the idea feedback examines whether the magnitude of the feedback influenced rater's selection. Hence, it represents the willingness of the raters to confirm the feedback information. For the operationalization, which is adapted from [70], the scores for each feedback information (number of likes, historical idea score and the recoded creativity score) were separately summed up from the selected ideas and divided by the number of selected ideas to consider different sizes of the selected idea sets. After normalizing each summed up feedback score by the number of selected ideas, each of the three attribute scores were z-transformed to account for the different scales. Subsequently, the means of the three z-transformed and normalized scores were calculated to get an overall comprehensive number that represent the final tendency to follow idea feedback information. Thus, the higher this number, the better the indication that participants followed the feedback when selecting ideas. The following equation represents the procedure:

$$TFIFI = Mean(Z\left(\frac{\sum likes\ sel.ideas}{\#\ sel.ideas}\right), Z\left(\frac{\sum his\ \ sel.ideas}{\#\ sel.ideas}\right), Z\left(\frac{\sum cs\ sel.ideas}{\#\ sel.ideas}\right))$$

4.2.2. Attendance on idea feedback information (AIFI). Attendance on idea feedback describes to what extent the idea feedback was visually attended by the participants. It was measured analogous to [25] as the number of idea feedback information fixated at least once divided by the total number of available idea feedback information presented to each participant. The resulting value reflects the percentage of the feedback that was visually attended. For example, an attendance-value of 80% means that 80% of the feedback information was visually attended, whereas 20% was visually ignored. It was determined as follows:

$$AIFI = \left(\frac{\sum feedback\ information\ fixated\ at\ least\ once}{total\ number\ of\ available\ feedback\ information}\right)$$

4.2.3. Other variables. Further information about gender, work profession as well as innovation contest experience was gathered with surveys to control for individual differences in terms of familiarity to the topic and the setting of idea selection tasks.

4.3. Statistical analysis

For investigating the effect of regulatory focus and subset size on the tendency to follow feedback information as well as the attendance to it, a two-way MANCOVA was performed that allows for analyzing group differences in terms of each dependent variable as well as on the dependent variables collectively [71]. Before starting the analysis, histograms and boxplots were inspected to prevent a violation of normal distribution of the data. Visual inspection did not reveal any indications for a violation, which was confirmed by a non-significant Kolmogorov Smirnov test ($p > 0.05$). Box M and Levene's test ensured the assumption of homoskedasticity for all variables ($p > 0.05$) [71]. Hence, the analysis was pursued and hypotheses were tested at a significance level of 0.05.

5. Findings

For hypotheses testing, the two-way 2x2 MANCOVA assessed the multivariate effect of the treatment variables regulatory focus and subset size on both dependent variables while controlling for gender, work experience and contest experience. The analysis showed that there exist a significant main effect for regulatory focus (Pillai's trace = 0.118, $F(2,51) = 3.405$, $p = 0.041$, $\eta^2 = 0.118$), the subset size (Pillai's trace = 0.148, $F(2,51) = 4.445$, $p = 0.017$, $\eta^2 = 0.148$) as well as the interaction of both factors (Pillai's trace = 0.111, $F(2,51) = 3.195$, $p = 0.049$, $\eta^2 = 0.111$). That corresponds to a medium effect size [72] for the two main effects and the interaction. The descriptive statistic is summarized in Table 1 and presents the z-transformed tendency to follow idea feedback and the average attendance on it in %. Table 2 describes the statistical significance of the individual measures contest experience, gender, work experience, regulatory focus, subset size as well as the interaction of both treatments. In order to assess the hypotheses, the ANOVA tests for both dependent variables were considered.

Table 1. Descriptive statistics

	Promotion focus (N=28)		**Prevention focus (N=31)**	
Dependent variables	**2 ideas (N=14)**	**4 ideas (N=14)**	**2 ideas (N=15)**	**4 ideas (N=16)**
Attendance idea feedback information Mean *(SD)* in %	0.7158 *(0.2106)*	0.5112 *(0.2060)*	0.7368 *(0.1656)*	0.6445 *(0.1966)*
	0.6135 *(0.2294)*		0.6892 *(0.1854)*	
Tendency to follow idea feedback information Mean *(SD)* z-transformed	0.3818 *(0.8243)*	-0.0439 *(0.5695)*	-0.3412 *(0.4638)*	0.0242 *(0.6840)*
	0.1689 *(0.7282)*		-0.1526 *(0.6073)*	

Table 2. Levels of the multivariate test

	Pillai's trace	**F**	**Sig.**	**Effect size (partial eta squared)**
Intercept	0.734	70.249	0.000	0.734
Contest experience	0.051	1.362	0.265	0.051
Gender	0.026	0.682	0.510	0.026
Work experience	0.038	1.014	0.370	0.038
Regulatory focus	0.118	3.405	0.041	0.118
Subset size	0.148	4.445	0.017	0.148
Reg. focus x Subset size	0.111	3.195	0.049	0.111

H1a hypothesized that raters with a promotion focus have a higher tendency to follow feedback information than raters with a prevention focus. The analysis confirms ($F(1, 52) = 1.887$, $p = 0.039$) the higher willingness of promotion focused raters to follow the feedback information ($M = 0.1689$, $SD = 0.7282$) compared to raters with prevention focus ($M = -0.1526$, $SD = 0.6073$). Consequently, H1a is accepted. H1b hypothesized that promotion focus primed raters attend to less idea feedback information compared to prevention focus primed ones. The data indicated that participants with a promotion focus searched for less idea feedback ($M = 0.6135$, $SD = 0.22944$) than participants with a prevention focus ($M = 0.6892$, $SD = 0.18537$). This difference was not significant ($F(1, 52) = 3.527$, $p > 0.05$) and subsequently rejects H1b. H2a hypothesized that raters presented with more ideas per

subset show a higher tendency to follow feedback information than when presented with fewer ideas per subset. The data revealed no statistical difference ($F(1, 52) = 0.015$, $p > 0.05$) for that tendency between presenting four ideas per subset ($M = -0.0076$, $SD = 0.62336$) compared to presenting two ideas to raters per subset ($M = 0.0078$, $SD = 0.74712$). Thus, H2a is rejected. H2b hypothesized that raters presented with more ideas per subset search for a smaller amount of feedback information than raters presented with fewer ideas per subset. The data supported this hypothesis ($F(1, 52) = 8.946$, $p = 0.004$) as raters presented with four ideas per subset attended to less feedback information ($M = 0.5823$, $SD = 0.2088$) than those presented with two ideas per subset ($M = 0.7267$, $SD = 0.18562$). Hence, H2b is accepted.

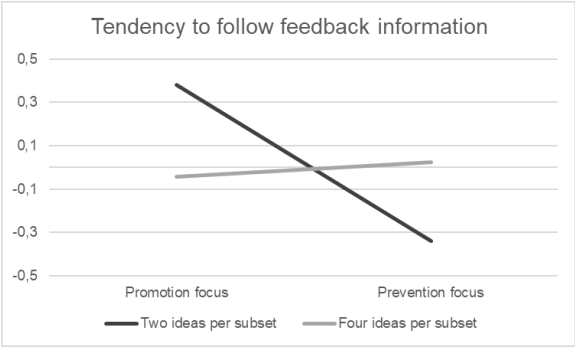

Figure 1. Interaction for tendency to follow feedback

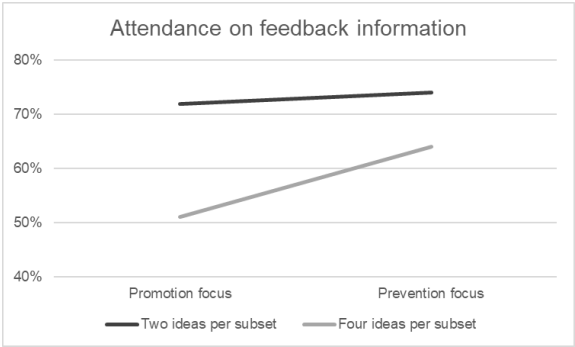

Figure 2. Interaction for attendance feedback

Next, the investigation of interaction effects unveiled further insights: Although there was no significant interaction on the dependent variable attendance feedback ($F(1, 52) = 0.568$, $p > 0.05$), the analysis revealed a significant interaction on the tendency to follow feedback information ($F(1, 52) = 5.255$, $p = 0.026$). This effect indicates a higher willingness to follow the feedback, when participants were primed to prevention focus and faced with four ideas per subset ($M = 0.0242$, $SD = 0.68401$) compared to presenting two ideas per subset ($M = -0.3412$, $SD = 0.46378$). Further, presenting two ideas to promotion primed participants lead to a higher tendency to follow feedback information ($M = 0.3818$, $SD = 0.82429$) than presenting four ideas ($M = -0.0439$, $SD = 0.56947$). Those interesting relations will be discussed in the following section. Figure 1 presents the z-scores of the tendency to follow feedback information, whereas Figure 2 presents the attendance on the feedback in %.

6. Discussion and implications

This research investigated the effects of regulatory focus and subset size on the anchoring effect of feedback information in the context of idea selection. The findings contribute to idea selection literature and have implications for practitioners as well.

First, the results provide empirical evidence that raters with a promotion focus are more susceptible to anchoring cues since they followed feedback information to a higher degree than their counterparts with a prevention focus. This phenomenon can be explained by the willingness of promotion focused individuals to assure success and avoid oversights [39] as they are more likely to be triggered by positive (feedback) information (e.g. the number of likes) to avoid missing out an opportunity, even if this involves a higher risk of falsely declaring bad ideas as good ones. Thus, this research confirms as one of the first the effect of regulatory focus on anchoring-cues in the field of idea selection. Second, with respect to the extent of information search, the results indicate a more extensive search for feedback information of prevention primed individuals compared to the shallower information acquisition of promotion primed raters. Although the difference was not significant in the present context, the tendency is consistent with related literature that argues for substantive use of information in prevention focus in decision making compared to their counterparts in promotion focus [16]. Third, depending on the number of simultaneously presented ideas per subset, this research indicates implications for the design of choice architectures: Analogous to previous findings [25], presenting more ideas per subset lead to a decrease in attention on feedback information as decision makers have to split attention on available options due to cognitive restrictions. Thus, the results strengthen theory that advocates for a lower proportion of information searched when presenting more options [53, 54]. At the same time, however, theory is also extended by investigating different subset sizes while holding the choice set constant. In terms of anchoring, no significant difference was found between subset size and the tendency to follow feedback information. Hence, the hypothesized effect that raters would adjust their strategy to consider anchors as hints when confronted with higher task complexity [48, 61] was not

confirmed. An explanation might be that the difference between both subset sizes and the associated change in task complexity was not sufficient to push raters to their information processing limits. Nevertheless, partitioning the choice set into subsets containing a certain number of simultaneously presented ideas is a design element whose effects are interesting for further investigations. Finally, another interesting phenomenon showed the investigation of the interaction effects: Presenting more ideas per subset to prevention focus primed raters significantly increased the tendency to follow feedback information. Thus, the more effortful information processing triggered by the prevention focus combined with the higher task complexity resulting from the simultaneous presentation of four options potentially induced a higher burden on the ability to process information, which could lead to use feedback information as a mental shortcut. Hence, as recommendation for contest hosts, raters can be nudged to be more impartial towards anchor cues when the selection task is primed in prevention focus and the number of simultaneous presented ideas is decreased. However, this advantage of the prevention focus diminishes when more ideas are presented simultaneously. In contrast, promotion focus primed raters were more likely to follow the feedback information when faced with only two ideas per subset. An explanation of the occurring phenomenon might be that decision makers need reference information to infer the desirability of an information cue, which can come from innate psychological scales (e.g. for temperature), prior knowledge or a mode of the task that supports joint evaluations [73]. In the context of this research, reference information can either come from prior knowledge or joint evaluations of options as innate psychological scales are unlikely. Regarding prior knowledge, raters need experience in form of past knowledge in that specific task and setting, which is in the actual situation again unlikely. Hence, in support of reasoning about joint evaluations, previous research has found that presenting all options simultaneously (as compared to sequentially) facilitates the identification of dominant options by building reference information through comparisons [74]. Transferred to the actual context, identifying dominant options should be more difficult when fewer ideas per subset (two ideas) are presented that might increase the tendency to follow feedback information. Concluding, whereas individuals in prevention focus tend to incorporate anchors especially when faced with the risk of exceeding information-processing constraints, raters primed to promotion focus had a higher susceptibility to follow feedback information when presented with fewer ideas per subset. In other words, cognitively effortful processes emphasize anchoring-effects, whereas in simpler tasks anchors are used intuitively as a cue to the correct answer [35].

7. Limitations and future research

Like any other research, this one also comes with a few limitations. The main effect of regulatory focus on attendance feedback information narrowly missed significance which can be addressed in future research on a different sample for further increasing statistical power. Another limitation might concern the number of ideas presented per subset: Due to screen size constraints, the maximum number of ideas that can be presented simultaneously without overlapping AOIs on feedback information had to be restricted to four options. Future research could explore effects of 6, 8, 10 or more options that are simultaneously presented in order to investigate rater's boundaries of information processing abilities and effects on susceptibility to anchors as well as attendance on feedback information. Moreover, the relationship between the tendency to follow feedback and the cognitive demand (cognitive load) might be a fruitful avenue for future investigations as adjustments to anchors were found to be driven by individual's tendency to minimize cognitive effort [75].

8. References

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