



UvA-DARE (Digital Academic Repository)

Start making sense: Compensatory responses to control- and meaning threats

Rutjens, B.T.

Publication date
2012

[Link to publication](#)

Citation for published version (APA):

Rutjens, B. T. (2012). *Start making sense: Compensatory responses to control- and meaning threats*.

General rights

It is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), other than for strictly personal, individual use, unless the work is under an open content license (like Creative Commons).

Disclaimer/Complaints regulations

If you believe that digital publication of certain material infringes any of your rights or (privacy) interests, please let the Library know, stating your reasons. In case of a legitimate complaint, the Library will make the material inaccessible and/or remove it from the website. Please Ask the Library: <https://uba.uva.nl/en/contact>, or a letter to: Library of the University of Amsterdam, Secretariat, Singel 425, 1012 WP Amsterdam, The Netherlands. You will be contacted as soon as possible.

Chapter 2

Steps, stages, and structure: Finding compensatory order in scientific theories

This chapter is based on Rutjens, B. T., van Harreveld, F., van der Pligt, J., & Noordewier, M. Steps, stages, and structure: Finding compensatory order in scientific theories. *Manuscript under revision at Journal of Experimental Psychology: General.*

Stage theories have been prominent in the social, behavioral, and life sciences since their inception. This is certainly true for psychological science, where many examples can be found ever since Freud introduced the concept of psychosexual stages. Stage theories in psychology assume that human development and adaptation move through an orderly and predictable series of steps (Baron, Earhard, & Ozier, 1995). Influential examples are Piaget's theory of intellectual development (Ginsburg & Opper 1979; see also Brainerd, 1972), Kohlberg's stages of moral development (1958), and Erikson's stages of identity development (1994). In the broad domain of the social and behavioral sciences, there is continuing debate and controversy about the extent to which processes such as human development, societal change, and health should be regarded as primarily discontinuous (the assumption of stage theories) or continuous (as presumed by continuum theories; see Abbott, 1995; Lerner, 2002; Stuart & Coltheart, 1988). Despite the controversy sparked by stage theories, their ubiquity suggests that they have an appeal to theorists and their audience alike. In the current paper we argue that a desire for order and predictability may contribute to this appeal.

Perceiving order, or structure, in the world and social environment has been argued to comprise a fundamental human motivation (Kruglanski & Webster, 1996; Whitson & Galinsky, 2008). According to the compensatory control model (Kay et al., 2009) perceiving order can be accomplished in different ways. One way is to affirm the notion that one has personal control over life and future outcomes. Alternatively, there are a number of strategies people employ to affirm order and prevent threatening perceptions of randomness. Research has shown that when personal control is threatened, people seek to affirm order in a variety of ways. Examples are bolstering belief

in external agents that control outcomes (such as an intervening God or powerful political system; Kay, Gaucher, Napier, Callan, & Laurin, 2008), imposing patterns and causal inferences on noise (Whitson & Galinsky, 2008; see also Foster & Kokko, 2009, for an evolutionary approach to motivated pattern perception), and enhanced belief in scientific progress (Rutjens, van Harreveld, & van der Pligt, 2010).

Recently, Shermer (2008) suggested that an important reason for the prominence of stage theories might be that they provide in our need to detect patterns and meaning in the world. Indeed, moulding complex environmental and behavioral phenomena into an orderly series of stages enhances our sense of understanding and, perhaps more importantly, the feeling that we can predict future outcomes. According to social psychologist Carol Tavris, stage theories “impose order on chaos {...} and predictability over uncertainty” (cited in Shermer, 2008, p.42). In the current article we aim to provide the first empirical evidence for the idea that stage theories indeed harbour an order-restoring function and therefore gain attractiveness when people are in need to thwart perceptions of randomness. If this notion is correct, order-threat should affect preference for stage theories. Such a finding would also extend the literature on threat and compensatory processes by showing that threats to order and control not only trigger compensation in the domain of religious and political beliefs (that often contain an external agent), but affect preference for scientific theories as well.

In sum, we hypothesize that threatening people’s perceptions of order will increase preference for stage theories over continuum theories. Study 2.1 tests whether a threat to order increases preference for a stage theory of grief. Study 2.2 gauges the effects of order-threat on preference for a stage theory of

Alzheimer's disease, which provides *negative* predictability regarding the course of the disease and as such enables us to test whether preference for stage theories is independent of valence. Study 2.3 investigates preference for a stage theory of moral development, and tests whether the motivation to perceive order underlies the predicted preference shift.

Study 2.1

Method

Participants. A total of 59 undergraduate students (53 females; mean age 20 years) participated in exchange for course credit.

Procedure. To threaten order perceptions, participants were randomly assigned to a control-threat or no-threat condition¹⁰. We manipulated control by asking participants to recall a negative situation over which they lacked (or had) control and to subsequently summarize the event. Next, they were asked to provide three reasons supporting the notion that the future is (un-)controllable (Rutjens et al., 2010). The manipulation was followed by four manipulation check items, consisting of two items (7-point scales) gauging control over, and the aversiveness associated with, the retrieved situation, and two items gauging generalized feelings of control ("Are you the actor in, or the director of, your own life?" and "To what extent do you feel that you can control what happens in your life?", $r = .62, p < .01$). Subsequently, participants were presented with short descriptions of two theories on the development of grief: a continuum theory (James & Friedman, 1998) and a stage theory (Kübler-Ross, 1969). Kübler-Ross' well-known theory of grief describes five stages of grief, from denial to acceptance. The description of the continuum theory pointed to the absence of a discernible

¹⁰ Which is a commonly used manipulation to induce perceptions of disorder; see, e.g., Kay et al., 2008.

and clear sequence of adaptation phases and argued that bereavement is different for each individual (depending on personality factors, demographic variables, etcetera). We asked participants to choose the theory that they thought best explains the process of grief.

Results

Manipulation check. Control-threat led to lower reported control over the situation ($M = 2.03$, $SD = 1.22$) than no-threat ($M = 6.08$, $SD = .86$), $F(1, 58) = 201.67$, $p < .001$, $\eta^2_p = .78$. Aversiveness did not differ between conditions, $p > .25$. Generalized feelings of control were also affected by the manipulation so that threatened participants reported lower control ($M = 4.65$, $SD = 1.05$) than non-threatened participants ($M = 5.26$, $SD = .71$), $F(1, 58) = 6.38$, $p = .014$, $\eta^2_p = .10$.

Main analysis. All participants in the no-threat condition preferred the continuum theory over the stage theory of grief, but control-threat led to an 18% reduction of this default preference, $\chi^2(1) = 4.91$, $p = .027$, Cramer's $V = .29$. Thus, although the majority of participants still indicated a preference for the continuum theory, this preference was significantly lower than in the no-threat condition (see Table 2.1).

Discussion

Results of this first experiment show that control-threat indeed affects preference for theories of grief. Although the default preference unequivocally lies at the continuum theory, results show a significant decrease of this preference upon control-threat. A second experiment was conducted to replicate these results with two modifications. First, we replaced the control-threat manipulation used in Study 2.1 with a randomness prime (which constitutes an alternative means to manipulate order-threat, see Kay,

Moscovich, and Laurin, 2010). Second, we employed a different set of theories (i.e., on the development of Alzheimer’s disease) in which the stage theory describes a certain process of deterioration rather than resolution (which was the case with grief, where the final stage is acceptance) while the alternative theory was simultaneously less predictable and more hopeful. In this way, we aimed to test whether the appeal of predictability under threat applies to both positively and negatively valenced processes.

Study 2.2

Method

Participants. A total of 43 undergraduate students (36 females; mean age 22 years) participated in exchange for course credit.

Procedure. Participants took part in a study that was ostensibly on ‘attitudes and language’ and were randomly assigned to a randomness prime or negativity prime manipulation (see Kay et al., 2010). The prime consisted of a scrambled sentences task, comprised of 16 word sets (each consisting of four to six words) in both conditions. Participants were first given an instruction on how to unscramble the word sets and create proper sentences, employing an example word set. It was explained that every word set consisted of one word that was redundant, and that the remaining words had to be rearranged in order to create a meaningful sentence. In the randomness condition, eight words of the total set were related to randomness (e.g., “disorder”, “chaos”). In the negativity condition, eight words were negative (e.g., “filthy”, “disgusting”)¹¹.

¹¹ An example word set in the randomness condition is *orange at he random chose*. See Kay et al.

(2010) for the full set of stimuli.

As in Study 2.1, participants were next presented with descriptions of two different theories, this time about Alzheimer's disease. After a brief explanatory text, the two theories were presented. The stage theory described Alzheimer's disease progressing via five stages, from very mild to severe cognitive deterioration. Thus, this theory described a clear-cut process of decline, resulting in a gravely negative end stage. The description of the continuum theory emphasized that there is no evidence for clearly discernible stages, and that there are large individual differences pertaining to the severity of the symptoms. Although every patient eventually ends up needy, the process takes place at different speeds across individuals (depending on a complex interaction of different predictors, from dietary pattern to genetic and social factors). It is important to note that the continuum theory description contained the hopeful possibility of living in relative health for a considerable number of years after being diagnosed. Both descriptions were based on Reisberg et al. (2003). Participants were asked to indicate which theory they preferred as the best explanation of the process of Alzheimer's disease.

Results and Discussion

As expected, participants primed with randomness were more likely to choose the stage theory than those primed with negativity, $\chi^2(1) = 4.36$, $p = .037$, Cramer's $V = .32$. In the randomness prime condition, 46% of the participants preferred the stage theory over the continuum theory, whereas this was only 16% in the negativity prime condition (see Table 2.1). This finding corroborates the results of Study 2.1 and indicates that people seek order and predictability when threatened, even when the predictable outcome is negatively valenced. In other words, after an order-threat negative

predictability becomes relatively more appealing than a potentially more positive but uncertain and non-structured outcome.

In a final experiment we aimed to replicate the results of Studies 2.1 and 2.2 using yet another set of theories. More importantly, Study 2.3 was designed to shed more light on the underlying motivational process and obtain more direct evidence for our assumption that threat increases preference for stage theories because of the need to thwart perceptions of randomness and affirm order. To test this idea, we included a modified version of the snowy pictures task (borrowed from Whitson and Galinsky, 2008; original by Ekstrom et al., 1976). This task has been used to show that lacking control triggers illusory pattern perception, which functions as a compensatory control mechanism by imposing structure on the world and environment (Whitson & Galinsky, 2008). If preference for stage theories is born out of the need to impose/perceive order, then illusory pattern perception should mediate the effect of threat on theory preference.

Study 2.3

Method

Participants. A total of 38 undergraduates (23 females; mean age 21 years) participated in exchange for course credit.

Procedure. As in Study 2.1, participants were randomly assigned to a control-threat or no-threat condition. The procedure and measures were identical, except for the inclusion of the modified snowy pictures task (consisting of twelve grainy embedded images and twelve non-images; see Whitson and Galinsky, 2008), which was presented after the manipulation checks. The images and non-images were presented in mixed order and participants were asked to identify if they saw an image or not, and

subsequently describe what the image was (or describe that there was no image). Illusory pattern perception was calculated by adding the number of times participants saw an image where none existed. Next, descriptions of two theories on moral development were presented. The stage theory was Kohlberg's theory of moral development (1958), which views moral development as occurring in a fixed sequence of stages, resulting in an end stage of universal ethical principles. The alternative theory was based on Tavris' (Shermer, 2008) critique on Kohlberg's stage theory and argues that moral development is different for each individual and should be regarded as a continuum rather than a series of stages. Participants indicated their preference and also indicated, on a 7-point scale, how strongly they endorsed their choice, from 1 (*not at all*) to 7 (*very much*)¹². The experiment ended with demographic measures, after which participants were thanked and dismissed.

Results

Manipulation check. Control-threat led to lower reported control over the situation ($M = 1.67$, $SD = .80$) than no-threat ($M = 5.59$, $SD = 1.28$), $F(1, 37) = 134.11$, $p < .001$, $\eta^2_p = .79$. Unexpectedly, threatened participants rated the retrieved situation as somewhat more aversive ($M = 6.29$, $SD = 1.06$ vs. $M = 5.65$, $SD = .86$) than control participants, $F(1, 37) = 3.83$, $p = .058$, $\eta^2_p = .10$ ¹³. Generalized feelings of control (measured with the same items as in Study 2.1, $r = .46$, $p < .01$) were marginally affected by the manipulation; threatened participants reported lower control ($M = 4.67$, $SD = .89$) than non-threatened participants ($M = 5.24$, $SD = 1.02$), $F(1, 37) = 3.39$, $p = .074$, η^2_p

¹² This allows us to compute a continuous theory preference variable, which makes it possible to test for mediation with theory preference as dependent variable.

¹³ We controlled for aversiveness in our subsequent analyses, which did not affect the reported patterns of results.

= .09. Controlling for aversiveness by entering it as a covariate however rendered the effect of the manipulation on generalized feelings of control significant, $F(1, 37) = 4.37, p = .044, \eta^2_p = .11$.

Main analyses. First, we replicated the previous results pertaining to theory preference: threatened participants were more likely to choose the stage theory than control participants, $\chi^2(1) = 3.75, p = .053$, Cramer's $V = .31$ (see Table 2.1). We also found that threatened participants perceived more illusory patterns ($M = 4.38, SD = 3.63$) than control participants ($M = 2.18, SD = 2.10$), $F(1, 37) = 4.93, p = .033, \eta^2_p = .12$. To test the role of compensatory need for order in the effects of threat on theory preference more specifically, we conducted a mediation analysis. First, we transformed theory preference into a continuous variable by multiplying it with the strength of endorsement of the indicated choice. Next, we performed a bootstrapping analysis (Preacher & Hayes, 2004) with threat as predictor, theory preference (continuous) as dependent variable, and illusory pattern perception as mediator. A bootstrapping analysis of 5000 samples confirmed mediation by illusory pattern perception, $p < .05$ (a point estimate of -1.14 was yielded, with a 95% confidence interval from -2.95 to -.076, thus not crossing zero).

Discussion

Study 2.3 replicated the effect obtained in Studies 2.1 and 2.2, showing that threat increases preference for a stage theory over a continuum theory, this time in the realm of moral development. Order-threat also increased illusory pattern perception, replicating Whitson and Galinsky (2008). Of particular interest to the current research is the finding that, as shown by mediation analysis, preference for stage theory was enhanced because of the motivated perception of order.

Table 2.1.
Percentage of participants preferring a stage theory (ST) over a continuum theory (CT) as a function of threat, Studies 2.1 – 2.3.

<i>Theory preference</i>	Control-threat		No-threat	
	ST	(CT)	ST	(CT)
Study 2.1 (Grief)	18%	(82%)	0%	(100%)
Study 2.2 (Alzheimer's disease)	46%	(54%)	16%	(84%)
Study 2.3 (Moral development)	48%	(52%)	18%	(82%)

Note. In Studies 2.1 and 2.2, p 's < .05; in Study 2.3, $p = .053$.

General Discussion

Three experiments provided experimental evidence for our hypothesis that stage theories gain attractiveness when perceptions of order are threatened. In Study 2.1, control-threat increased preference for a stage theory of grief. Study 2.2 replicated this finding using a different manipulation (randomness prime) and a stage theory with a negatively valenced outcome. Study 2.3 showed that the effect of threat on theory preference was mediated by illusory pattern perception, supporting the notion that stage theories trigger the motivation to impose order on chaos (as suggested by Tavris; Shermer, 2008).

The current findings converge with both Kay et al. (2008; 2010) and Whitson and Galinsky (2008), who argued that randomness and threats to personal control trigger the motivation to restore order. The results of Study 2.3 are, to our knowledge, the first to directly show that the motivation to perceive order underlies the effects of threat on compensatory preferences. This finding adds to the work of Kay and colleagues on motivational mechanisms underlying threat compensation. Their work indicates that order-threat increases self-reported defensive denial of the role of randomness in life,

which leads to compensatory belief in a controlling God (Kay et al. 2008, Study 2). The current research contributes to these findings by showing that threat triggers the motivation to perceive order (i.e., illusory pattern perception), which accounts for the observed compensatory preference shifts (i.e., increased preference for stage theories). The fact that participants in Study 2.2 preferred negative predictability over an alternative that was both more unpredictable and more hopeful further attests to the powerful motivation to perceive order. Thus, when people experience the need to combat perceptions of randomness, it seems that they prefer ‘the devil they know’.

In future research it would be worthwhile to assess the potentially moderating role of religiosity. It has been argued that an important function of religious beliefs is that these satisfy the need to predict and control events (Spilka, Shaver, & Kirkpatrick, 1985), which suggests that those adhering to a religion are, by default, relatively shielded against threats to order (i.e., God is in control over the events that take place in our universe, Kay et al., 2008). The current research employed largely secular samples of Dutch undergraduate students, who might be more prone to engage in order restoration as reported in this article.

Stage theories are ubiquitous in various sciences. Although the intention of this article is not to participate in the debate on the adequacy of these theories to explain and predict human behavior and life’s outcomes, we argue that part of their appeal lies in their ability to provide a sense of order. When randomness lurks, stage theories provide us with the means to let order and predictability prevail over chaos and uncertainty.