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Expected Consequences of Anger-Related Behaviours

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Abstract

In a study with 140 participants (66 men, 74 women), we investigated behaviour outcome expectancies (cognitive, affective and relational) regarding a broad group of anger-related behaviours (e.g. hit someone, run away). Results of a three-mode component analysis indicated that behaviour outcome expectancies vary considerably, depending on the behaviour (aggressive versus nonaggressive ones), the consequence (consequences related to the self versus consequences for the anger) and the individual. The findings are discussed in the context of catharsis theory, emotion regulation and functionalistic accounts of emotion-related behaviour. Copyright © 2006 John Wiley & Sons, Ltd.

Key words: anger; anger-related behaviours; behaviour outcome expectancies; individual differences; three-mode component analysis

INTRODUCTION

A behaviour outcome expectancy refers to a person's belief that a particular behaviour will result in a specific type of outcome (Bandura, 1986). Behaviour outcome expectancies are considered key notions in cognitive goal-oriented approaches of human behaviour, such as Cognitive Social Learning Theory (Bandura, 1986; Mischel, 1973) and Expectancy Value Theories (Ajzen & Fishbein, 1975; Edwards, 1961). At least two reasons account for their central and important role. First, people's expectancies about the consequences of their behaviour may guide them in their behavioural choices (e.g. Bandura, 1973; Bushman, Baumeister, & Philips, 2001). For example, Ellsworth and Scherer (2003) argued that 'evaluating the social consequences of a particular action is an important step before finalizing the evaluation process and deciding on appropriate behavioural processes' (p. 581). Second, behaviour outcome expectancies may represent key features that people use to categorize behavioural alternatives and to structure their behavioural world.

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Behaviour outcome expectancies may vary considerably as a function of both the behaviours and their consequences (Harris, 1992). Moreover, the link between behaviours and anticipated consequences may also vary across persons (e.g. Bushman et al., 2001; Perry, Perry, & Weiss, 1989). For example, according to the Cognitive-Affective Personality System theory, individuals differ in the availability and chronic accessibility of cognitive-affective units and their patterns of interrelationships; behaviour outcome expectancies represent one type of such units (Mischel & Shoda, 1995). Consequently, investigating behaviour outcome expectancies for a specific behavioural domain requires a clear and systematical understanding of these different types of variation.

Despite their central and important role in cognitive accounts of behaviour, studies that have examined behaviour outcome expectancies are notably missing. As such, the main purpose of the present study is to obtain a better understanding of the expectancy strength by which consequences are linked to behaviours, taking into account how this expectancy strength varies as a function of behaviours, consequences and individuals.

Furthermore, given that emotions and behaviours are inherently related to one another (e.g. Frijda, 1986; Zhu & Thagard, 2002), this study focuses on behaviour outcome expectancies of emotion-related behaviours. This focus links up with functionalistic accounts (Barrett, 1998; Barrett & Campos, 1987), in which an emotion is considered to be associated with several adaptive functions that may guide emotion-related behaviour; such functions may be part of anticipated consequences. More specifically, we will focus on the anticipated consequences of behaviours associated with anger. This emotion can be considered a prototypical emotion (Conway & Bekerian, 1987; Shaver, Schwartz, Kirson, & O'Connor, 1987) that people experience frequently (Averill, 1982). Moreover, the anticipated consequences of particular anger-related behaviour may be of key importance in their regulation (Berkowitz, 2003).

An important behaviour associated with anger is aggression. In fact, it is part of several definitions of anger (e.g. Deffenbacher, 1994; Rothenberg, 1971) and receives a great deal of attention in research on anger-related behaviours (e.g. Berkowitz, 1990; Neighbors, Vietor, & Knee, 2002). Furthermore, a prominent outcome expectancy regarding anger-instigated aggressive behaviours is the expectancy about possible changes for the anger experience itself. As such, one may, for example, expect that behaving aggressively will reduce the anger.

Anger reduction may further be linked to the concept and theory of catharsis. 'Catharsis' literally means 'cleansing' or 'purification'. According to catharsis theory, acting aggressively is an effective way to purge angry feelings (Breuer & Freud, 1893–1895/1955). The catharsis claim has received (and still receives) considerable support from popular psychology, mass media and self-help books. Accordingly, people may believe that aggression reduces anger, consistent with this catharsis view. However, studies show that there are considerable individual differences in the extent to which people expect their anger to decrease after displaying aggression (e.g. Bushman et al., 2001; Harris, 1992).

Anger reduction is also closely related to emotion regulation, implying that people attempt to control their anger by using cognitive and behavioural strategies (e.g. Gross, 2002; Manstead & Fisher; 2000). Applying a hedonistic account (e.g. Clark & Isen, 1982; Isen, 1984), regulation may imply the desire to decrease unpleasant emotions such as anger.[1] Also

[1]In the present study, the desires people have for particular consequences, as accounted for by hedonistic and emotion regulating theories, will not be studied as such. Rather, we will focus on the expectations people have regarding these consequences.

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in this context, aggression may play an important role: Bushman et al. (2001), for instance, argued that the goal of affect regulation (i.e. feeling better) may be a significant cause of aggression.

So far, however, very few empirical studies have investigated the expectancy strength by which anger reduction is linked to anger-induced aggression. The lack of such studies is even more prominent if one considers a broader scope of anticipated consequences and of anger-related behaviours. Yet, recent research has demonstrated that, apart from aggression, a wide variety of nonaggressive behaviours is associated with anger (Linden et al., 2003; Van Coillie & Van Mechelen, 2005). In addition, with regard to anticipated consequences, next to anger reduction, a variety of other emotions and cognitions may be relevant as well.

Therefore, the present study extends earlier findings concerning anticipated emotion regulation and cathartic effects of aggression to a greater range of anger-related behaviours and expected cognitive-affective consequences. We selected behaviours from a comprehensive anger-related behaviour taxonomy systematically derived from free-listing data (see Van Coillie & Van Mechelen, 2005, for more details). The taxonomy encompasses three aggressive behaviour categories, namely physical, verbal and self-aggression, and five nonaggressive behaviour categories, namely talking about your anger, turning yourself away, showing that you are moved, decreasing tension and trying to let your anger fade away. From each behaviour category, we selected two distinctive instances in such a way that they reflected the within-category variance. Table 1 provides a more detailed description of the anger-related behaviour categories and their instances, used in the present study.

As to behaviour outcome expectancies, we started, based on earlier theoretical work on catharsis and emotion regulation, from the expectation regarding the extent to which the experienced anger would decrease, increase or remain unchanged. This outcome expectancy was broadened with expectations regarding the extent to which, what people felt and thought more in general (emotions and cognitions) would worsen, improve or remain the same (see also Bushman et al., 2001). We further took into account that, in general, the emotion of anger can be conceived as an interpersonal emotion (e.g. Averill, 1982), implying that in almost any anger episode (at least) two persons are involved, namely the person who is angry and the person at whom the anger is directed. Consequently, we made a distinction between changes in the feelings and thoughts of the person who was angry (subject = self) and those of the person at whom the anger was directed (subject = other). As to thoughts, we made an additional distinction regarding their target, which could be either the person who was angry (target = self) or the person at whom the anger was directed (target = other). In Table 2, one may find a structured overview of the resulting consequence domains. Examples of anticipated consequences include 'your thoughts about yourself would become rather negative' (subject = self, target = self) and 'the thoughts of the other about you would become strongly positive' (subject = other, target = self). Finally, in addition to the domain 'your anger', and to the domains as listed in Table 2, we included in our study the extent to which people expect a change in the quality of the relation between themselves and the person at whom they were angry (see also e.g. Tangney et al., 1996).

In addition, to provide more insight into the individual differences in anger-related behaviour outcome expectancies (and to provide external support for the validity of our results), we investigated the relationship between these individual differences and a number of broad as well as narrow established personality dimensions. As to the former,

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Table 1. Overview of behaviour categories and selected behaviours

Label of behaviour category	**Description of behaviour category**	**Selected behaviours**
Physical aggression	Every form of physical aggression	Hit someone Hit with doors
Verbal aggression	Every form of verbal or non-physical aggression	Hurt the person at whom you are angry Scream
Self-aggression	Aggression directed towards yourself	Harm yourself Drink too much alcohol
Talking about your anger	Talking about your anger with the person at whom you are angry or with other persons, without using verbal or physical aggression	Talk with the person at whom you are angry Talk about what happened with someone else
Turning yourself away	Turning yourself away physically, non-verbally, or verbally from the person at whom you are angry or from the physical situation, without doing something else	Run away Keep silent
Showing that you are moved	Showing that you are shattered or moved, without showing any form of aggression to other persons	Sigh Weep
Decreasing tension or relaxing yourself	Working off tension in a non-destructive way or relax oneself	Do some sport Make a walk
Trying to let your anger fade away	Trying to, within oneself, cognitively or passively, let the anger disappear or fade away	Put things in perspective Think about something else

Table 2. Structured overview of affective/cognitive consequence domains

		Subject	
		Self	**Other**
Affective		Your feelings	Feelings of the other
Cognitive	*Target = Self*	Your thoughts about yourself	Thoughts of the other about you
	Target = Other	Your thoughts about the other	Thoughts of the other about him/herself

we included the Big Five personality traits; past research suggests that predominantly agreeableness is related to anger behaviour (e.g. Martin, Watson, & Wan, 2000). With respect to the latter, we included the habitual anger expression styles of anger-in, anger-out and anger-control (Spielberger, Krasner, & Solomon, 1988). The inclusion of these traits may be most useful in unravelling the process basis of anger expression in terms of expected behavioural consequences.

In sum, the present study investigates the expectancy strength by which cognitive/affective and relational consequences are associated with a broad set of anger-related

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behaviours, with special attention to possible individual differences in the behaviour-anticipated consequence relationships. More specifically, participants imagined that they were angry with someone they knew well and liked, and carried out anger-related behaviours. (Note that we fixed the type of the anger target to control for possible situational influences.) Next, they indicated for a list of consequence domains to what extent and in which direction they expected them to change after carrying out each behaviour. Afterward, they completed Big Five and anger-expression questionnaires.

We have four sets of *research questions and hypotheses.* The first set relates to the core combination of one particular behaviour and one particular expected consequence, namely the possible anger reducing effects of aggressive behaviour. The second set broadens this core combination with respect to the consequences, and the third set with respect to the behaviours. The fourth set pertains to variables that are external to the behaviour outcome expectancy data. In particular, our research questions and hypotheses are as follows: First, with regard to possible anger-reducing effects of aggressive behaviour, in line with previous research (e.g. Bushman et al., 2001), we hypothesize that some, but not all, subjects will endorse the catharsis view of the effect of aggression on anger; as such, some but not all people might indeed consider aggressive behaviour as functional to regulate, that is, to reduce their anger.

Second, we will investigate whether people also expect an impact of aggression on the broader set of consequences (cognitive, affective and relational) we included in our study. Since there is no reason to expect this impact only for the anger-consequence, we believe this to be the case. Furthermore, we will examine whether individual differences show up in the expectancies of relational, cognitive and affective consequences upon the display of aggression and, if yes, whether they parallel individual differences in the expectations about anger reduction.

Third, we will investigate whether people expect anger-related behaviours other than aggression to impact the above mentioned consequence domains. Previous research suggests this to be the case (Cuddy & Frame, 1991). Furthermore, we will also examine whether there are individual differences in the consequences people expect for nonaggressive anger-related behaviours, and whether they correspond to individual differences in outcome expectancies for aggression.

Finally, we hypothesize that individual differences in behaviour outcome expectancies will be related to the dispositional variables that we investigate; in particular, for expected negative consequences of aggression on one hand, and agreeableness and anger-out on the other hand. Indeed, agreeableness and anger-out have been shown to reflect individual differences in the tendency to behave aggressively (e.g. Bushman et al., 2001; Martin et al., 2000). Accordingly, since behaviour outcome expectancies can be assumed to influence the display of behaviours, in the sense that anticipated negative consequences may imply a decreased behavioural tendency, we hypothesize agreeable people to expect negative, and anger-out people positive consequences upon the display of aggression.

METHOD

Participants

Participants were 140 first-year psychology students of the University of Leuven, who participated in the study as partial fulfilment for a study course requirement. Due to

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technical problems during the data collection, the data of one participant were excluded, reducing the final sample size to 139 (65 men and 74 women). Their mean age was 18.9 years, ranging between 18 and 36 (SD = 1.97).

Materials

A directed imagery task and two standard personality questionnaires were used to assess the variables of interest.

Directed imagery task
To assess the expectancy strength by which the behaviours are associated with the cognitive-affective consequences, participants were asked to imagine that they were angry at somebody they knew well and liked, and that they would execute one of 16 behaviours (as presented in the rightmost column of Table 1). Next, they were asked to indicate for each of eight consequence domains, to what extent they would expect it to change after executing that particular behaviour. The consequence domains included the six listed in Table 2, in addition to 'your anger' and 'the quality of the relation between you and the other'. The 16 behaviours were fully factorially combined with the eight consequence domains, yielding a total of 128 (16×8) items per participant.

NEO-FFI personality questionnaire
The NEO-FFI personality questionnaire was originally developed by Costa and McCrae (1992). We used an exact translation of the original English version to Dutch, provided by Hoekstra, Ormel and de Fruyt (1996). The questionnaire consists of 60 items, grouped into 5 scales of 12 items that measure the Big Five personality dimensions of extraversion, neuroticism, openness, agreeableness and conscientiousness.

Self-Expression and control scale
The Self-Expression and Control Scale (SECS; Van Elderen, Maes, Komproe, & Van der Kamp, 1994) is a 40-item self-report instrument consisting of four subscales: anger-in, anger-out, anger-in-control, and anger-out-control. Each scale consists of ten items. The SECS is a Dutch extension of the widely used Anger-Expression scale (Spielberger et al., 1988).

Procedure

Participants were tested in small groups, ranging between 20 and 40 persons. They first completed the directed imagery task, which took about 40 minutes, followed by the two personality questionnaires. They finished in an hour or less.

Both the instructions and the stimuli of the directed imagery task were presented via a computer. Participants were informed that the aim of the task was to examine to what extent they would expect a number of consequence domains to change after carrying out an anger-related behaviour in a situation in which they had been angry with someone they knew well and liked. Next, they were notified that a series of behaviours would appear on their screen, one at a time. Each behaviour would be accompanied by a list of consequence domains, and they had to indicate for each behaviour separately, the extent to which they would expect each consequence domain to change.

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After receiving these instructions, the first behaviour (e.g. yell) appeared on their screen, together with the imagery-instruction (i.e. 'imagine that you are angry with someone you know well and like, and that you would ''yell''') and the consequence-instruction (i.e. 'indicate for each of the following aspects, to what extent you would expect it to change after you would have executed that particular behaviour'). They then had to indicate for each of the eight consequence domains, to what extent they would expect it to change, using an 11-point Likert scale, ranging from −5 to 5. For the domains listed in Table 2, a score of −5 (5) was labelled 'become strongly negative (positive)'; for 'the quality of the relation between you and the other', a score of −5 (5) corresponded to 'worsen (improve) strongly' and for 'your anger' to 'decrease (increase) strongly'. For all domains, a score of zero corresponded to 'remain the same'. After completing all items with respect to this behaviour, the next behaviour was presented, again accompanied by the same set of instructions. This procedure was repeated, until all 128 behaviour-anticipated consequence combinations were completed. The behaviours were presented in a randomized order that differed across participants; the order of the consequence domains was kept fixed.

Both the NEO-FFI personality questionnaire and the SECS were presented in a paper-and-pencil version. As to the former, respondents were asked to indicate the degree to which they agree or disagree with each of the statements, using a five-point Likert-type scale ranging from (0) 'strongly disagree' to (4) 'strongly agree'. As to the latter, they were asked to indicate the degree to which they generally experience each of the items, using a four-point Likert-type scale, ranging from (1) 'almost never' to (4) 'almost always'.

Analysis

Our data consist of outcome ratings for all combinations of persons, behaviours and outcome expectancies (i.e. numerical three-mode three-way data, Carroll & Arabie, 1980). Thus, it is appropriate to use three-mode component analysis (3MCA; Kroonenberg & De Leeuw, 1980), which is a technique specifically designed for this type of data. To get a better understanding of this technique, we will first compare it to more familiar techniques. First, 3MCA is a dimensional reduction technique, unlike methods of cluster analysis (including latent class analysis) that imply a categorical reduction in terms of clusters or classes. Second, 3MCA is an exploratory data-analytic technique, unlike confirmatory techniques (such as confirmatory factor analysis and structural equation models more in general), in which the user has to specify a priori particular patterns or relationships. Third, compared to two-mode principal component analysis, which is a technique designed for the analysis of two-way data, 3MCA is meant for the analysis of three-way data; as such, it allows the researcher to investigate the three modes implied by the data (i.e. in our case: persons, behaviours and anticipated outcomes) simultaneously, including all main and interaction effects in which the modes are involved. This is particularly interesting in our case, since we want to investigate the expectancy strength by which consequences are associated with anger-related behaviours, herewith simultaneously allowing for differences in expectancy across individuals, behaviours, and consequence domains.

As a generalization of the standard two-mode PCA, 3MCA searches for three (instead of two) limited sets of unobserved components defined on the three data modes[2] (Kiers & Van Mechelen, 2001; Van Mechelen & Kiers, 1999). In particular, in the present study,

[2]Note that in 3MCA, just as in standard two-mode PCA, elements of each mode have interchangeable roles, without drawing for instance distinctions between dependent and independent variables.

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3MCA summarizes the persons by a number of unobserved person components, the behaviours by a number of unobserved behaviour components, and the consequence domains by a number of unobserved consequence components. These component variables may be considered underlying person, behaviour and outcome dimensions, with all persons, behaviours and outcomes having a specific score[3] on them. As such, they represent differences between persons, behaviours and outcomes, respectively. Note that, analogous to what is the case in two-mode PCA, in 3MCA the component matrices typically are rotated towards a simple structure.

Furthermore, compared to two-mode PCA, in which each set of component scores for one mode is uniquely related to a set of component loadings for the other mode, in 3MCA, there is no one-to-one relationship between the components for different modes, which otherwise may differ in number as well. Rather, 3MCA employs a small three-way array, called the core, to relate the components of the three modes to each other. This core array, which is estimated together with the three component matrices, gives a summary description of the three-way information in the full data table, including all two- and three-way interactions present in it. In our case, it may yield a concise description of the individual difference structure in behaviour-anticipated consequence associations. Note that the core may introduce correlations between elements of the same mode scoring high on different components.

As an hypothetical example, consider a core array with a highly negative entry pertaining to the combination of a behaviour component (capturing, say, the amount of aggression implied by the behaviours), a consequence component (capturing, say, the amount of consequences for the relation), and a person component; this entry may indicate that persons scoring high on the person component in question (unlike low scoring persons) may expect very negative relational consequences upon the display of behaviours implying a large amount of aggression. Note that, to compare the behaviour outcome expectancy patterns for persons scoring high on several person components, we need to take several core entries into account; we then expect persons with similar sets of person component scores to have similar behaviour outcome expectancy patterns.

Finally, to further interpret the individual differences in the data, the person components that were derived from our 3MCA will be related to the dispositional variables included in our study by means of a canonical correlation analysis.

RESULTS

A 3MCA is especially suitable when the data contain non-negligible three- and two-way interactions between the three data modes. To check for these interactions, a fixed effects three-way ANOVA was carried out on the 139 (persons) $\times$ 16 (behaviours) $\times$ 8 (expected outcomes) three-way data, with the persons, behaviours and expected outcomes as independent variables, and outcome ratings as dependent variables. Subsequently, variance components were calculated. From the resulting estimates as presented in Table 3, it is clear that the three-way and one of the two-way interactions are sizeable.

[3]Within the context of a 3MCA model, the terms 'component loading' and 'component score' can be used interchangeably, as in the model equation, the scores/loadings pertaining to the three modes have interchangeable roles (Kiers & Van Mechelen, 2001). For reasons of simplicity, we will use the term 'component score' throughout this article.

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Table 3. Variance components

Effect	Variance components
Persons	3.16
Behaviours	**24.66**
Consequences	**5.57**
Persons × Behaviours	**17.91**
Persons × Consequences	4.63
Behaviours × Consequences	**5.97**
Persons × Behaviours × Consequences	**38.10**
Total	100

Note: Values > 5 have been printed in bold.

Accordingly, 3MCA is clearly indicated here. Moreover, unlike the analysis of variance, it may reveal the contents of the major variance components involved.

We fitted 3MCA models with the numbers of person, behaviour and consequence components all ranging from 1 to 5. A generalized scree test (Timmerman & Kiers, 2000) suggested a solution that summarizes the data with three person, two behaviour and two consequence components. This model accounted for 48% of the total variance. To check the stability of the selected solution, the data set was divided into two equally large parts, based on a random split of the set of the persons. On both halves, 3MCA-analyses with the same numbers of components were conducted. Congruence coefficients with values all above 0.98 showed that the resulting solutions were highly similar to those of the full data set.

Table 4 presents the component scores for the behaviours on the two behaviour components. From this table, it can be derived that 'talking with the person at whom you are angry', 'talking about what happened with someone else' and 'putting things in perspective' all score high on the first behaviour component. Common to these three behaviours is that they include a nonaggressive approach towards the problem, the anger

Table 4. Behaviour component scores

Behaviour	Nonaggressive approach	Aggressive approach
Hit someone	−0.01	**0.54**
Hit with doors	−0.02	0.22
Hurt the person at whom you are angry	0.03	**0.53**
Scream	−0.04	0.26
Harm yourself	−0.22	0.27
Drink too much alcohol	−0.02	0.27
Talk with the person at whom you are angry	**0.56**	−0.08
Talk about what happened with someone else	**0.36**	0.12
Run away	−0.10	0.23
Keep silent	−0.27	0.11
Sigh	−0.04	0.09
Weep	0.10	0.15
Do some sports	0.34	0.12
Make a walk	0.28	0.11
Put things in perspective	**0.43**	0.05
Think about something else	0.18	0.13

Note: Component scores ≥ 0.35 have been printed in bold.

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Table 5. Consequence domain component scores

Consequence domain	Target self	Anger
Your anger	−0.02	**0.92**
Quality of relation between you and the other	**0.47**	−0.02
Your feelings	**0.35**	0.23
Your thoughts about yourself	**0.42**	−0.02
Your thoughts about the other	0.16	0.29
Feelings of the other	**0.42**	−0.07
Thoughts of the other about him/herself	0.20	0.03
Thoughts of the other about you	**0.49**	−0.13

Note: Component scores ≥ 0.35 have been printed in bold.

experience or the person that instigated it. Hence, this first behaviour component is labelled 'nonaggressive approach.' As to the second behaviour component, one can see that 'hitting someone' and 'hurting the person at whom you are angry' both score high on it. Common to both behaviours is that they imply aggression directed at other persons. Accordingly, we labelled this second behaviour component 'aggressive approach.'

Table 5 presents the component scores for the anticipated consequences on the two consequence components. Note that, in order for all consequence scales positive values to correspond to a positive meaning, the responses on the 'anger-consequence' scale were reversed (such that positive values represent a decrease in the anger). From Table 5, one can see that 'the quality of the relation between you and the other', 'your feelings', 'your thoughts about yourself', 'the feelings of the other' and 'the thoughts of the other about you' all score high on the first consequence component. Common to those five consequences, unlike to the other ones, is that they are not explicitly directed at the person at whom one is angry, their target either being the person who is angry himself/herself or being left unspecified. For simplicity's sake, we labelled this consequence component 'target self', keeping in mind, however, that it also includes consequences in which the target was unspecified. For the second consequence component, there is only a single high scoring consequence, 'your anger'; therefore, that consequence component was labelled 'anger'.

Making use of the behaviour and consequence components, we may interpret the behaviour and consequence main and interaction effects. For this purpose, we averaged the reconstructed data from the 3MCA-model across all persons and, separately for each of the four behaviour-consequence components pairs, across all behaviours and consequences scoring high (≥ 0.35) on their respective components. The results are displayed in Figure 1. From this figure, one can infer that expected consequences for aggressive approach behaviours are generally more negative than those for their nonaggressive counterparts. One can also see that more negative consequences are expected on a self-related level as compared to the level of anger, especially upon the display of aggressive behaviours.

To interpret the person components as individual difference dimensions, we need the core array as presented in Table 6. From this table, one can infer that persons scoring high on the first person component expect negative consequences for themselves upon the display of aggressive approach behaviours, that persons scoring high on the second person component expect positive consequences of all kinds upon the display of nonaggressive approach behaviours, and that persons scoring high on the third person component expect their anger to decrease upon the display of aggressive approach behaviours. To obtain a

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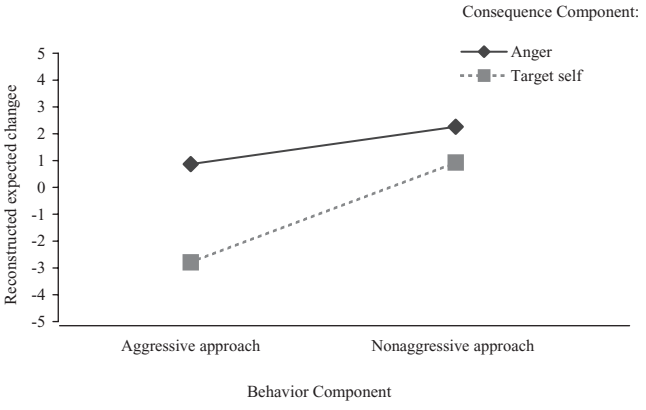

Figure 1. Reconstructed expected change scores, averaged across persons for four groups of behaviour-consequence pairs scoring high (≥ 0.35) on their respective components.

better insight into the individual differences under study, making use of the core array, we created three different sets of reconstructed data entries, each set corresponding to one of the three person components. To generate these three sets, subsequently for each component, we entered in the 3MCA-model the actual scores of the participants on that component and kept the scores on the other two components fixed on their mean. Next, we reduced each of the three resulting sets of reconstructed data entries by averaging them, for each of the four possible behaviour-consequence components pairs, across all behaviours and consequences scoring high (≥ 0.35) on their respective components. Boxplots of the resulting averaged reconstructed data values are presented in Panels A, B and C of Figure 2.

Panel A of Figure 2 presents the four boxplots obtained by varying the scores on the first person component (PC1). From this panel, one can see that this component represents individual differences in expectations about self-related thoughts and feelings upon the display of aggressive approach behaviours. Moreover, one can see that for this behaviour-consequence combination, almost all reconstructed data entries range from zero to strongly negative, meaning that almost nobody expects an improvement in self-related thoughts and feelings upon the display of aggressive behaviours and that people's expectations in this regard range from a strong worsening (persons scoring high on PC1), to a slight or no worsening (persons scoring low on PC1).

Table 6. Core array

Person Component	Nonaggressive approach		Aggressive approach	
	Target self	Anger	Target self	Anger
PC1	−4.97	9.25	**−157.40**	−1.38
PC2	**96.47**	**66.82**	0.80	−0.33
PC3	−1.45	3.7	0.42	**47.82**
Proportion of fit (%)[a]	12.01	6.57	18.96	10.46

[a]Proportions of fit represent the contributions of each combination of a behaviour component and a consequence domain component to the total amount of variance accounted for by the model (i.e. 48%); those values may also help in interpreting the sizes of the individual core elements.

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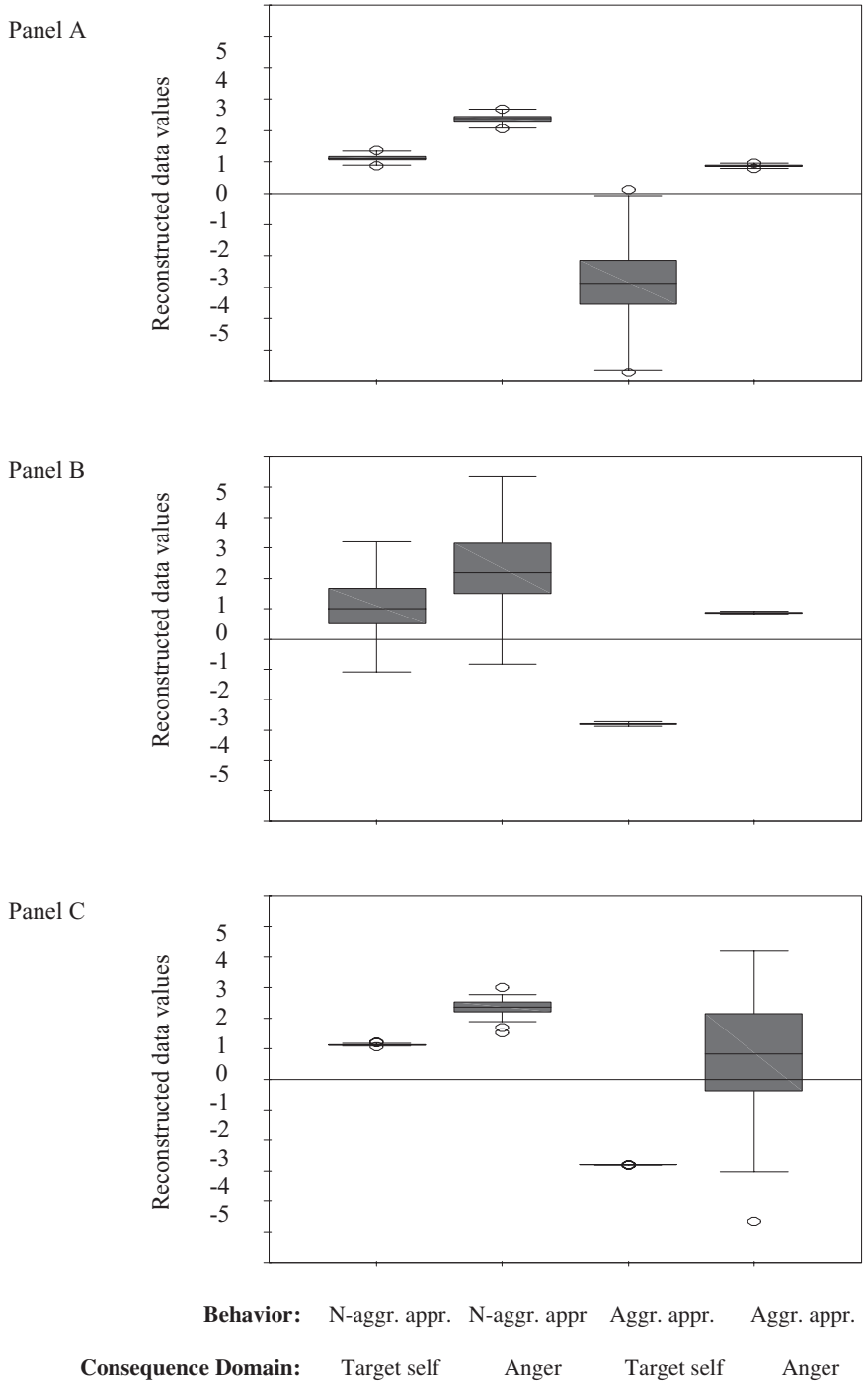

Figure 2. Boxplots of averaged reconstructed data values with varying scores on the person components. Panels A, B, and C represent varying scores on PC1, PC2, and PC3, respectively; N-aggr. appr. = Nonaggressive approach behaviours; Aggr. appr. = Aggressive approach behaviours.

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Panel B of Figure 2 presents the four boxplots obtained by varying the scores on the second person component (PC2). From this panel, one can see that this component represents individual differences in expectations about the anger and self-related thoughts and feelings upon the display of nonaggressive approach behaviours. Moreover, one can see that for both behaviour-consequence combinations, all reconstructed data entries range from slightly negative to very positive, with the vast majority of the scores being positive. This means that most, but not all participants expect an improvement in both consequence domains upon the display of nonaggressive approach behaviours, and that people's expectations in this regard range from a strong improvement (persons scoring high on PC2) to a slight worsening (persons scoring low on PC2). Additionally, what is not directly visible from this panel but what can also be derived from the core array, there is a strong connection between the individual differences in the two groups of behaviour-consequence combinations: Persons scoring high on PC2 will expect both their anger to decrease and their self-related thoughts and feelings to improve upon the display of nonaggressive approach behaviours, the correlation between the scores on both reconstructed behaviour-consequence combinations amounting to 0.96.

Panel C of Figure 2 presents the four boxplots obtained by varying the scores on the third person component (PC3). From this panel, one can infer that this component represents individual differences in expectations regarding the anger-domain upon the display of aggressive behaviours. Moreover, one can see that for this behaviour-consequence combination, reconstructed data entries range from strongly positive to strongly negative, meaning that expectations range from a strong decrease (persons scoring high on PC3) to a strong increase of the anger (persons scoring low on PC3) upon the display of aggressive behaviours. More precisely, one can see that, whereas the majority of the persons have positive reconstructed data entries, a considerable number of persons scores around zero, and another non-negligible amount of persons scores clearly negative, meaning that in addition to many people who expect their anger to decrease upon the display of aggressive behaviours, a considerable amount of people do not expect their anger to change, or even expect it to increase.

It may be noted that the first and the second person component are moderately positively correlated, $r = 0.40$. This means that persons who expect a worsening for self-related thoughts and feelings upon the display of aggressive behaviours (i.e. persons scoring high on PC1), also expect positive consequences in both consequence domains upon the display of nonaggressive behaviours (i.e. also score high on PC2) and vice versa.

To get more insight into the individual difference structure in behaviour-outcome expectancies, the person components that were derived from our 3MCA were further related to the Big Five personality traits and the Self Expression and Control Scales, by means of a canonical correlation analysis. Since the Self- Expression and Control Scales did not contribute substantially, we performed the analysis again, without these scales though. As only one of the canonical correlations (amounting to 0.39) appeared significant, $F(15, 310) = 1.70$, $p = 0.05$, we retained the first pair of canonical variables only. The correlations of the person components and Big Five scales with their respective canonical variables are displayed in Table 7.

On the component-side of this table, we see a positive correlation for the first and a strongly negative correlation for the third person component with their canonical variable, meaning that this variable represents individual differences in negative overall outcome expectancies upon the display of aggressive behaviours (as both person components pertain to a particular type of consequences for aggressive behaviours). On the Big Five

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Table 7. Correlations of the person components and Big Five scales with their respective canonical variables

Person component	
PC1	**0.35**
PC2	0.07
PC3	**−0.98**
Big Five scale	
Neuroticism	−0.27
Extraversion	**0.40**
Openness	**0.59**
Agreeableness	**0.85**
Conscientiousness	**0.42**

Note: Correlations > 0.30 are printed in bold.

scale-side, we see sizeable positive correlations for all scales with their canonical variable, except for neuroticism, with a particularly high correlation for agreeableness. All this implies that a higher position on agreeableness relates to more negative expected consequences of aggressive behaviour. Finally, none of the gender differences on the three person components were statistically significant.

DISCUSSION

Summary and implications

First, as hypothesized, there are considerable individual differences regarding people's expectations about the effect of aggression on anger. Specifically, their expectations ranged from believing that their anger would increase to believing that their anger would decrease (see rightmost boxplot in Panel C of Figure 2). In this regard, our results are in line with previous findings on individual differences in catharsis theory (e.g. Bushman et al., 2001). In particular, our results extend and refine these findings, in that they show that there are three different groups of people. A first and large group of 'catharsis believers' who expect their anger to decrease upon the display of aggressive behaviours (and as such might consider aggression as functional to reduce their anger), a second sizeable group that expects no change in anger, and a third (and non-negligible) group who expects their anger to increase. As an aside, in terms of expected consequences (decrease in anger and self-related consequences), our results imply that there is no need for a distinction regarding the exact nature of the aggression: According to our participants, the exact way in which the aggression is displayed (physically or verbally) is deemed irrelevant.

Second, consistent with our assumption, aggression leads people to expect much broader cognitive, affective and relational consequences, beyond a change in their anger. Such expectations, however, are restricted to domains whose consequences are self-relevant. Evidently, the self acts as an important point of reference in expectancies concerning the outcomes of anger-related behaviours. This finding could be related to the present discussion in experimental psychology and cognitive neuroscience on the possible special status of self-related processing (Gillihan & Farah, 2000). Moreover, there were also individual differences with regard to this broader set of self-relevant consequences of aggression, with expectations ranging from neutral to negative (see third boxplot in Panel

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A of Figure 2). These individual differences further appear to be unrelated to those concerning expectations about anger. That is, people who expected a decrease in anger upon aggression did not necessarily expect the self-relevant consequences to become less negative as well, or vice versa. Because the set of self-relevant consequences includes emotions as well, our findings imply that people may have different expectations regarding different emotions. This view further suggests that emotion regulation might not act as a unitary concept.

Third, with regard to the broader group of anger-related behaviours, our results show that, in line with our hypothesis, people also expect anger-related behaviours other than aggression to impact the above mentioned consequence domains. This impact is not general, though, as people only expect consequences from a specific subset of behaviours, namely those that imply an approach towards the anger, the problem, or the person who instigated the anger. As such, it indeed makes sense that in order for a behaviour to have an impact, it actually needs a point of application, which may require some kind of approach. Furthermore, regarding the expected consequences of nonaggressive anger-related behaviours, our results indicate that most people expect positive consequences from such behaviours, both for their anger and for their self-related consequences. However, individual differences show up to the extent in which this is the case (see two leftmost boxplots in Panel B of Figure 2). These individual differences are further slightly (and only for self-related thoughts and affects) related to those regarding consequences of aggressive behaviours. The most striking finding is that there are different patterns of individual differences for the two kinds of behaviour: For nonaggressive approach behaviours, behaviour outcome expectancies co-occur across both consequence domains (which can be considered part of a complex three-way interaction). In contrast, for aggressive approach behaviours, behaviour outcome expectancies do not co-occur. In this regard, our results suggest that, when investigating behaviour outcome expectancies, adopting a fine-grained individual differences approach is recommended, linking up with accounts such as Cognitive-Affective Personality System theory (Mischel & Shoda, 1995).

Our fourth and last research question was whether and how individual differences relate to dispositional variables. In line with our hypothesis, we found that primarily the Big Five personality dimension of agreeableness relates to more negative expected consequences of aggressive behaviour. In particular, our results suggest two reasons for why agreeable people do not act aggressively when angry. First, and most important, they expect that their anger will not decrease and perhaps even increase upon aggression. Second, they expect that aggression may negatively affect self-related thoughts and feelings. Note that the relationship we found between agreeableness and behaviour outcome expectancies is important, as in previous research, agreeable people have been shown to use aggression less frequently (e.g. Martin et al., 2000). As such, our results suggest that this relationship may be rooted in the negative consequences that agreeable people expect from behaving aggressively. This may also be considered an indirect validation of the mediating influence of outcome expectancies on behaviour. To be sure, adding a behavioural element in future studies should allow us to draw even more firm conclusions in this regard.

Limitations and suggestions for further research

One could object that our findings are limited in the sense that they rely on self-report data from a sample of university students. Self-report data may indeed be susceptible to distorting biases, such as socially desirable responding. However, regarding social

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desirability biases, we found that several respondents reported that they expected positive consequences for aggressive behaviours (an answer that cannot be considered socially desirable). Nevertheless, replications using other methods (e.g. experience sampling) and samples (e.g. an adult population) could add to the validity of our results.

One may also question the nature of the directed imagery nature that we used. In this task, people first imagined that they were angry in a specific situation. However, it is not fully clear whether participants actually experienced anger in this task. Adding a manipulation check in future studies could establish whether this instruction was successful in eliciting anger. Participants also had to imagine that they had executed a particular behaviour in that specific situation. Since behaviours were manipulated within participants, and since participants expected different (and sometimes even opposite) consequences for these behaviours, we may conclude that this second imagery instruction was successful, indeed. Moreover, the hypothetical or 'imagined' behaviour-character is an intrinsic property of behaviour outcome expectancies: People are assumed to first reflect on outcomes, before conducting some behaviour, and consequently, collecting this type of imagery data is not only appropriate, but even mandatory when measuring outcome expectancies**.**

Despite some task-related limitations, the results of the present study yield a rich and meaningful picture that replicates and meaningfully extends previous research findings on anger-related behaviour outcome expectancies. Such expectancies appear to be fairly subtle and subject to several kinds of individual differences. Clearly, in any attempt to fully grasp them, the behaviour, the outcome, as well as the individual must be taken into account.

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