

Change of self-efficacy verbalizations and derivation of functions

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Relationship among self-efficacy, rigidity and derivation of functions through stimulus equivalence is addressed. Eight subjects who scored high on a self-efficacy scale were selected, four of them scoring high on a rigidity questionnaire and four scoring low. They were trained to form two equivalence classes (Class~1: A1, B1, C1, D1; Class~2: A2, B2, C2, D2). Then, specific self-efficacy verbalizations about unperformed tasks (A1 and A2) were assessed and only subjects presenting high levels of self-efficacy continued. Then, subjects had to perform two tasks from Class~1 (A1 and B1). Both tasks were manipulated so that subjects received false feedback indicating unsuccessful performance. Lastly, subjects were tested for their specific self-efficacy verbalizations about unperformed tasks (C1, D1, A2, B2, C2 and D2). Results showed that high rigidity scorers maintained original high self-efficacy verbalizations and that low scorers changed original self-efficacy verbalizations, reporting not to have abilities enough to solve the novel tasks.

Cambio en verbalizaciones de autoeficacia y derivación de funciones. Se analiza la relación entre autoeficacia, rigidez y derivación de funciones a través de relaciones de equivalencia. Se seleccionan ocho sujetos con alta puntuación en autoeficacia, cuatro de ellos con alta puntuación en rigidez y cuatro con puntuación baja. Son entrenados para formar dos clases de equivalencia (A1, B1, C1, D1; A2, B2, C2, D2). Se evalúan sus verbalizaciones específicas de autoeficacia ante dos tareas etiquetadas respectivamente con A1 y A2 y sólo aquellos que muestran alta autoeficacia continúan el experimento. A continuación ejecutan dos tareas etiquetadas respectivamente con A1 y B1. Ambas tareas son manipuladas de forma que los sujetos reciben feedback de fracaso. Finalmente, se evalúan sus verbalizaciones de autoeficacia ante seis tareas nuevas etiquetadas con C1, D1, A2, B2, C2 y D2. Los sujetos con puntuaciones bajas en rigidez cambiaron sus verbalizaciones de autoeficacia, informando no tener habilidades suficientes para realizar las nuevas tareas. Los sujetos con puntuaciones altas de rigidez mantuvieron verbalizaciones de alta autoeficacia.

Self-efficacy is a traditional topic in mainstream Psychology. It refers to people's beliefs about their capabilities to produce certain performances (Bandura, 1977). The relation between self-efficacy beliefs and behaviour has been explored across several fields like health (Fernández, López, Comas, García and Cueto, 2003; Vinaccia, Contreras, Restrepo, Cadena and Anaya, 2005), education (Carbonero and Merino, 2004), psychopathology (Villamarín, 1990) or professional areas (Salgado and Moscoso, 2000). So far, these studies have been mainly addressed from a correlational perspective, being only a few the experimental studies on the relations between self-efficacy and actions taken. Furthermore, most procedures in self-efficacy literature involve the change in self-efficacy verbalizations through tasks manipulations consisting on the presentation of false feedback and normative information (e. g., Bouffard-Bouchard, 1990), but it is still unknown the conditions under which changes in self-efficacy may occur without any direct tasks manipulation or without any stimulus generalization process being involved.

The recent developments on equivalence classes (Sidman and Tailby, 1982) and derived relational responding are offering a new contextual account for cognition and complex human behaviour, as well as very useful experimental procedures (for a detailed description of Relational Frame Theory, see Hayes, Barnes-Holmes and Roche, 2001, and the recent series of articles in the *International Journal of Psychology and Psychological Therapy*, 2004, v. 4, 2 and 3). Within this perspective, some studies have proved the emergence of novel or derived complex behaviour that cannot be traced to a history of direct training or learning, including the study of self-concept (Barnes, Lawlor, Smeets and Roche, 1996), attitudes (Grey and Barnes, 1996), attributions and locus of control (Visdómine and Luciano, 2002), stereotypes (Kohlenberg, Hayes and Hayes, 1991), saying-doing relations (Luciano, Herruzo and Barnes-Holmes, 2001), discrimination of own behaviour (Luciano, Barnes-Holmes and Barnes-Holmes, 2002) and perspective taking (Luciano, Molina, Gómez-Becerra and Cabello, in press; McHugh, Barnes-Holmes and Barnes-Holmes, 2004).

The present study is the first one in examining the concept of self-efficacy from the point of view of derived relational responding. Specifically, it is examined if the typical procedures in self-efficacy literature, involving the presentation of false feedback and normative information through manipulated tasks,

can be enriched from the perspective of Relational Frame Theory, in this case, from the equivalence classes or coordination relational frames. This means to apply for the very first time the methodology of transfer of functions to the derived change of self-efficacy verbalizations. In other words, it is examined whether a direct change of self-efficacy in particular tasks might transfer to novel tasks that have never been performed, by means of their participation in equivalence classes with the tasks directly manipulated.

Contrary to the most of studies published on self-efficacy behaviour, which deal with the change of low self-efficacy beliefs, in the present study we explore the change of high self-efficacy verbalizations. High self-efficacy beliefs are presumed to be as problematic as the low self-efficacy beliefs, probably being involved in the risk insensitivity patterns (Lee, 1989) or in the reiterated and unsuccessful efforts to control the own emotions and thoughts, one of the most pervasive consequence defining the emotional avoidance disorder (Luciano and Hayes, 2001; Luciano, Rodriguez and Gutiérrez, 2004). Therefore, a better understanding of the conditions under which high self-efficacy beliefs can be altered in absence of any direct expectative-changing experience may have relevant applied implications in education as well as in social and clinical arenas. This is the main goal of this study.

An additional goal is to explore the correlations between the change of self-efficacy verbalizations through the equivalence procedures and a measure of rigidity behavior assessed by responses on a specific rigidity questionnaire. Several studies have shown that individuals scoring high on rigidity scales are more unlikely to change their behaviour to meet the demands of a new situation (e.g. Schaie, Dutta and Willis, 1991). In this study, we examine the differential pattern of change in the self-efficacy verbalizations showed by participants scoring high *versus* low in a rigidity questionnaire.

Method

Participants

Eight undergraduate students (four women and four men) volunteered to participate in the study. Their ages ranged from 20 to 24 years. None of the subjects had previously had experience with the stimulus equivalence procedures. All eight subjects scored high on the *General Self-efficacy Scale* (Baessler and Schwarzer, 1996). Four of them scored high on the *Rigidity Questionnaire R-2* (Pelechano, 2000), whereas the other four participants scored low on the rigidity questionnaire.

Experimental setting and apparatus

The experiment was conducted in a small room in the Human Operant Behaviour laboratory at the University of Almería. It was equipped with a table, two chairs, an Apple Macintosh Classic II computer and different paper-and-pencil materials.

Two questionnaires were administered. On one hand, the Spanish adaptation of the *General Self-efficacy Scale* (Baessler and Schwarzer, 1996) composed of ten items to be answered on a 10-point Likert scale from «strongly disagree» to «strongly agree». Its reliability and validity have been demonstrated (Baessler and Schwarzer; Sanjuán, Pérez and Bermúdez, 2000).

On the other hand, it was administered the *Rigidity Questionnaire R-2* (Pelechano, 2000), consisting on 39 items in a yes/no response format. There exists evidence for its adequate psychometric properties (Pelechano).

The stimuli used for equivalence classes were presented on eight white paper cards (11 by 7 cm / 4 by 2.5 inches). Each card contained the word 'Task' and a three-letter nonsense syllable printed in black capital letters [Class~1: Task XYC (A1), Task KOM (B1), Task LIP (C1), Task DUS (D1); Class~2: Task NAX (A2), Task WEC (B2), Task TAF (C2), Task JOH (D2)]. The alphanumerical designations have been introduced for convenience, but they were never available to the participants. Other paper-and-pencil materials (e.g., response sheets) as well as special software for computer-based tasks were developed for the purpose. They will be described in detail in the next sections.

Experimental design

A within-subject design with replications across subjects was used. Subjects were selected on the basis of their scores in the general self-efficacy scale and the rigidity questionnaire. Pre-screened subjects were trained to form two four-member equivalence classes (Class~1: A1, B1, C1, D1; Class~2: A2, B2, C2, D2). Then, a test for specific self-efficacy verbalizations about two unperformed tasks (Task A1 and Task A2) was applied. Only the participants showing high specific self-efficacy verbalizations received the experimental training. It was implemented through two tasks, labeled each with a syllable from Class~1 (Task A1 and Task B1). Both tasks of Class~1 were manipulated so that subjects received false feedback and normative information indicating unsuccessful performance. The tasks pertaining to Class ~2 were used as a control condition, that is, subjects did not perform any task labelled with syllables from this class. Finally, a test was implemented to measure the derived transfer of functions or the changes in specific self-efficacy verbalizations about the unperformed tasks labeled with the remaining stimuli in Class~1 (Task C1 and Task D1), and the absence of transfer of functions to all the tasks in Class~2.

Experimental tasks

The experimental training directed to change high specific self-efficacy verbalizations was implemented through two computer-based tasks. Each task was labeled with a syllable from Class~1 (Task A1 and Task B1). These labels were displayed on the top of the computer screen (in 26-point Times New Roman font) during all the time that the participants were performing them.

In Task A1, the participants had to figure out the color, shape and type of flower matching six different «psychological traits» (optimism, suspicion, indecision, perfectionism, extroversion and obsession). A matching-to-sample procedure was used. In any given trial, four stimuli appeared simultaneously in the computer screen: a sample stimulus at the top, and three comparison stimuli at the bottom left, bottom center and bottom right. Participants were requested to select one of the comparison stimuli by using the mouse. The sample stimulus was one of the six psychological traits. The three comparison stimuli were either three names of colors, three names of shapes or three names of flowers. A total of 18 trials were displayed: three trials (color, shape and flower trial) per each of the six psychological traits. Manipulated feedback

(«correct» or «wrong») was delivered in the 18 trials regardless of the participants' choices. The proportion of trials followed by «correct» was 0.23 and the proportion of trials followed by «incorrect» was 0.77. When all the trials had been implemented, a message displayed in the computer screen reported the subject's global score and normative information regarding other participants' scores. This message indicated a limited competence of the participant in the task (see Figure 1).

Task B1 consisted on finding out the thoughts preceding different actions performed by a character. Materials used by Luciano et al. (in press) were adapted and arranged in a computer-based matching-to-sample format. For each trial, four stimuli appeared simultaneously in the computer screen: The sample was a scene showing a character behaving in a particular way (either running, dancing, eating, reading, swimming, greeting, laughing or phoning). The comparison stimuli were three scenes showing the same character having three different thoughts. Participants were requested to select one of the comparison scenes by using the mouse. A total of eight trials, one per action, were implemented. As in Task A1, manipulated feedback («correct» or «wrong») was delivered on all trials regardless of the subjects' choices. The proportion of trials followed by «correct» was 0.25 and the proportion of trials followed by «incorrect» was 0.75. A message similar to the message displayed in Task A1 was presented when the matching trials were finished. The subject's global score and normative information regarding other participants' scores were displayed, showing that the participant's performance had been clearly worse than the other participants' performance.

Procedure

Phase 1: Prescreening

The *General Self-efficacy Scale* and the *Rigidity Questionnaire R-2* were collectively administered to 102 undergraduates to identify individuals scoring high (>70th percentile of the screening sample) on the self-efficacy scale and either high (> 70th percentile) or low (< 30th percentile) on the rigidity questionnaire. The experimenter telephoned subjects meeting the screening criteria and invited them to participate in the study.

Phase 2: Equivalence classes training and testing

Participant was seated in the experimental room and the experimenter read loudly the following instructions:

YOU HAVE NOT GOT IT!
YOUR SCORE ON THE TASK XYZ HAS BEEN:
12 POINTS
INFORMATION ABOUT OTHER PARTICIPANTS
The Record Score on the TASK XYZ has been 54 points
The Average Score on the TASK XYZ has been 33 points
76,6% have successfully performed TASK XYZ
23,4% have unsuccessfully performed TASK XYZ

Figure 1. Message displayed in the computer screen when the «Task XYZ» (A1) was finished

During the next hour you will be presented with several computer tasks. In the first stage of the experiment, you will not have to do anything but pay attention to the name of the tasks that you will be performing afterwards, which I will show you printed on several cards.

Then the experimenter started presenting the cards, containing each the word Task followed by one nonsense syllable (e.g. Task XYZ). The purpose was the formation of two, four-member equivalence classes (Class ~1: A1, B1, C1, D1; Class ~2: A2, B2, C2, D2) by means of a respondent-type training (Leader, Barnes and Smeets, 1996). The eight nonsense syllables were presented to the participants in the form of six stimulus pairs (e.g., A1-B1). The first stimulus of each pair was presented for 1 sec. [e.g. Task XYZ (A1)], followed by the second stimulus in the pair [e.g. Task KOM (B1)]. Following 3 sec. between-pair-delay, other stimulus pair was presented (e.g., B1- C1) in the same way. The six stimulus pairs were presented in a fixed sequence (A1-B1, B1-C1, C1-D1, A2-B2, B2-C2, C2-D2) that was repeated 8 times (48 trials in total).

Once completed a training-block (the A-B, B-C, C-D sequence repeated 8 times), the equivalence tests were presented. Matching to-sample format tests were employed to determine the emergence of symmetry relations (B1-A1, C1-B1, D1-C1, B2-A2, C2-B2, D2-C2), transitive relations (A1-C1, B1-D1, A1-D1, A2-C2, B2-D2, A2-D2) and equivalence relations (C1-A1, D1-B1, D1-A1, C2-A2, D2-B2, D2-A2). Each one of these relations was presented twice, with a total of 36 test trials. The next experimental phase started when more than 90% of correct responses were performed on the matching-to-sample tests. If a subject did not achieve the 90% correct responses mastery criterion, a new training-block was run, followed by a new equivalence test block. The training-test sequence was repeated until the 90% correct responses criterion was achieved.

Phase 3: Self-efficacy verbalizations testing (PRE-TEST)

Specific self-efficacy verbalizations about two unperformed tasks (Task A1 and Task A2) were assessed. Subjects were requested to answer the two questions that follow, printed in two different cards: «Do you think that you have abilities enough to perform the Task A1? (Yes/No)»; «Do you think that you have abilities enough to perform the Task A2? (Yes/No)». Participants who answered «no» to one or both questions would be excluded from further participation in the study because the experimental intervention was designed for individuals showing high specific self-efficacy verbalizations about the tasks. The eight prescreened subjects reached the high specific self-efficacy verbalizations criterion, so all of them proceed to the next phase.

Phase 4: Experimental tasks performance

Upon answering the two previous questions, the experimenter explained the participant that s/he had to perform the computer-based tasks whose names had been earlier shown in cards. First, the experimenter gave the instructions for Task A1 (its description is in the previous section «*Experimental tasks*»). Then, the experimenter asked the participant to report what s/he had to do, using her/his own words. If everything had been understood properly, the subject run three practice trials and then s/he began the task. When s/he finished it, the experimenter explained the

participant that s/he had to perform a new task called Task B1 and gave the instructions needed to perform it (for its description, see the section «*Experimental tasks*»). As in Task A1, the experimenter checked that the participant had understood everything properly. The subject ran three practice trials and then s/he began the task. When the subject finished it, the experimenter asked him/her to spend some minutes answering some questions before continuing with other computer tasks.

Phase 5: Equivalence stability testing and self-efficacy verbalizations testing (POST-TEST)

Participants were presented with six A-5 sheets of paper containing each the name of one unperformed task and two questions. The names of the tasks appeared at the top center of the paper (in a 26-point Times New Roman font) and were presented in the following order: Task LIP (C1), Task NAX (A2), Task WEC

classes. Two training blocks was the minimum training that participants received (S. 6) and five training blocks was the maximum training needed (S. 7). Regarding the equivalence stability tests, the criterion adopted for holding that participants maintained or retained the two trained equivalence classes was that all the responses to the six stability tests were class-consistent. Four participants (S.1, S.2, S.5 and S.6) did respond in accordance with the two trained four-members equivalence classes but four participants (S.3, S.4, S.7 and S.8) did not, that is, they mixed up the stimuli between classes.

Table 2 shows the data corresponding to the specific self-efficacy verbalizations tests. As shown, the four high scorers on the rigidity questionnaire (S.5, S.6, S.7 and S.8) maintained their original high self-efficacy verbalizations about the six unperformed tasks. However, the four low scorers on the rigidity questionnaire (S.1, S.2, S.3 and S.4) changed their original self-efficacy verbalizations to some extent, reporting not having

Table 1

Formation and stability of equivalence classes: percentage of correct responses in the symmetry (Sy), transitive (Tra) and equivalence (Equ) tests after completing an equivalence training block. Data in bold characters indicate that the mastery criterion was reached; for the stability tests, (X) indicates that the participant maintained the two trained four-members equivalence classes and (-) indicates that the participants did not maintain the two trained classes

	Number of training blocks and equivalence tests															Stability tests
	Block ~1			Block~2			Block~3			Block~4			Block~5			
	Sy	Tra.	Equ.	Sym.	Tran.	Equ.	Sym.	Tran.	Equ.	Sym	Tran.	Equ.	Sym	Tran.	Equ.	
S. 1	75	33.3	66.7	66.7	58.3	50.0	100	100	100							X
S. 2	66.7	33.3	33.3	66.7	50.0	83.3	91.7	100	100							X
S. 3	50	25	41.7	58.3	83.3	66.7	66.7	75	83.3	100	100	91.7				–
S. 4	25	50	25	83.3	66.7	75	75	83.3	83.3	100	91.7	100				–
S. 5	58.3	50	66.7	100	50	83.3	100	91.7	100							X
S. 6	83.3	100	100	100	100	91.7										X
S. 7	66.7	41.7	50	100	50	83	100	50	75	100	66.7	83.3	100	100	100	–
S. 8	75	58.3	66.7	83.3	75	83.3	91.7	91.7	100							–

(B2), Task DUS (D1), Task TAF (C2) and Task JOH (D2). At the bottom of each sheet, two questions were printed. The first one, intended to assess the stability of the two four-member equivalence classes previously trained, was: «Which other tasks do you associate the Task— with?» The second question, intended to assess the changes in the specific self-efficacy verbalizations, was: «Do you think that you have abilities enough to perform the Task—? (Yes/No). Participants wrote their answers in the same sheets.

When the participants had answered all the questions, the experimenter argued that they were out of time to perform the remaining computer tasks. The participants were properly debriefed and the experiment finished.

Results

Table 1 shows the data corresponding to both the formation and the stability of equivalence classes. Regarding the formation of equivalence classes, Table 1 shows the percentages of correct responses in the equivalence tests per training block. Although with some variability in regard to the number of trials needed, all subjects reached test criteria for the formation of equivalence

Table 2

Subjects' answers on the specific self-efficacy verbalizations tests. (Y) indicates that the participant's answer to specific self-efficacy verbalizations tests was «Yes» and (N) indicates that the answer was «No»

	SPECIFIC SELF-EFFICACY TESTS: <i>Do you have abilities enough to perform the Task? (Y/N)</i>							
	Pre-test		Post-test					
	A1	A2	C1	D1	A2	B2	C2	D2
LOW RIGIDITY								
S. 1	Y	Y	N	N	Y	Y	Y	Y
S. 2	Y	Y	N	N	Y	Y	Y	Y
S. 3	Y	Y	N	N	N	N	N	N
S. 4	Y	Y	N	N	N	N	N	N
HIGH RIGIDITY								
S. 5	Y	Y	Y	Y	Y	Y	Y	Y
S. 6	Y	Y	Y	Y	Y	Y	Y	Y
S. 7	Y	Y	Y	Y	Y	Y	Y	Y
S. 8	Y	Y	Y	Y	Y	Y	Y	Y

abilities enough to solve new tasks. Participants S.1 and S.2, who responded in accordance with the two four-members equivalence classes in the equivalence stability tests, changed self-efficacy verbalizations about the unperformed tasks labeled with C1 and D1 stimulus, but not about the tasks labelled with A2, B2, C2 and D2. Therefore, a differential transfer of the change of self-efficacy in accordance with the trained equivalence relations was found. The subjects S.3 and S.4, who did not retain the two trained equivalence classes, changed self-efficacy statements about all the new tasks, reporting not to have abilities enough to solve any of them (C1, D1, A2, B2, C2 and D2).

Discussion

Four participants (S.3, S.4, S.7 and S.8) did not respond in accordance to the two trained four-member equivalence classes when they were exposed to the equivalence stability tests. Several factors have to be considered in order to discuss these unexpected results. On one hand, the mastery criterion (90% correct responding) in the equivalence tests might have allowed the production of incorrect responses, consequently reducing the strength of the equivalence classes.

Another problematic aspect could have been the fixed sequence used in the respondent-type training. Based on previous research on behavioural acquisition procedures with mentally retarded population (e.g., Valero and Luciano, 1992), it can be hypothesized that if stimuli had been presented in a random order and the AB, BC, CD trials had been integrated progressively, the stability of equivalence relations and the differential transfer of changes in self-efficacy would have been facilitated. Future research will clarify these aspects.

Another factor to explain the absence of the maintenance of the equivalence classes in four out of eight subjects, is related to the stimuli conforming such classes. Participants could have abstracted the characteristics shared by all the stimuli in both classes (Task + consonant-vowel-consonant syllable) and responded in accordance to only one class containing the eight stimuli, as it is shown in other controlled studies about the competition between the experimental and pre-experimental history on the development of equivalence relations (Ybarra, Luciano and Gómez, 2002). In fact, the change in self-efficacy shown by the participants S.3 and S.4 was transferred across all the new stimuli (C1, D1, A2, B2, C2, D2), reporting not to have abilities enough to solve any of these new tasks.

Despite the limitations exposed about the maintenance of the two equivalence classes in four of the eight subjects and, consequently, regarding the methodological control involving Class ~2, the present study is the first one showing the transfer of functions of changing self-efficacy verbalizations through novel situations in participants with low scores on rigidity measures (see next paragraph for discussion of high and low rigidity measures). More specifically, in those subjects who retained the two four-members equivalence classes (S.1 and S.2), the transfer of the new self-efficacy verbalizations to the untrained members of Class ~1 has been proved, along with the maintenance of the original high self-efficacy verbalizations for the Class ~2 members. In the case of participants S.3 and S.4, the transfer of functions occurred across all members of both classes, which is coherent with the lack of maintenance of the two classes shown by these participants in the stability tests. So far, only

correlational studies had been developed on this regard and, consequently, these data allow a better explanation of the conditions under which people change their self-referred beliefs and perceptions without any previous experience with a particular task. Our study suggests that these conditions would involve a specific relation between the tasks (in our example, one of equivalence) and a particular function given to some of the members of the class. This conceptualisation provides an account of personal beliefs not mechanistic and more influenced by the social context in which they are framed.

Besides the achievement of transfer of self-efficacy to untrained tasks, another very remarkable result is that transfer occurred according to the score, high *versus* low, in the Rigidity Questionnaire R-2 (Pelechano, 2000), which shows the validity of such questionnaire in predicting the changes in high specific self-efficacy verbalizations. All high scorers maintained their original high self-efficacy verbalizations despite unsuccessful outcomes, whereas all low scorers changed and reported low self-efficacy. This is consistent with previous studies in which the behaviour of high scorers on rigidity measures tends to persist over time and is less sensitive to situational demands or experimental changing contingencies (Schaie et al., 1991; Wulfert, Greenway, Farkas, Hayes and Dougher, 1994). However, our work means a step forward as long as the experimental tasks employed were more personally relevant and involved more complex self-discriminative functions. Our findings show that the subjects with high scores on both the rigidity and the self-efficacy measure did not contact effectively with the experimental consequences indicative of unsuccessful performance. This insensitivity to unsuccessful outcomes could be the result of an extensive history of social reinforcement for «being right» through multiple examples. Given this history, each unsuccessful trial of Task A1 and B1 could even be an opportunity to strengthen the verbal context of 'being right' and, consequently, to function as an *augmental* (Hayes, Zettle and Rosenfarb, 1989) transforming the functions of the experimental tasks. Future research should examine whether «rigid» and «non-rigid» individuals differ in their responsiveness to social and direct consequences when they are exposed to multiple situations where both kinds of contingencies are manipulated and confronted.

Although the size of the sample in the current study is reduced and replications with more participants are needed, as well as some changes in the procedure for the equivalence class formation, as previously commented, the present study is the first one that achieves a derived change in self-efficacy. These findings justify further research on this regard, as important applied implications can be outlined. Our data suggest that the functional characteristic of behaviour (and not exclusively the formal topographies) must be considered in order to select the methods for changing personal beliefs (although this first-order change is not the only therapeutic purpose, see Hayes, Masuda, Bissett, Luoma and Guerrero, 2004, for a review of alternative approaches oriented to contextual change). We have proved that «non-rigid» participants change their specific self-efficacy verbalizations when unsuccessful feedback and comparative information are displayed. However, the same experimental manipulation is not effective for the «rigid» participants. Perhaps, other strategies as metaphors or paradoxes, with an inherently less literal content that allows the contact with a broader set of contingencies, could be more useful for these participants, in the case that changes in self-

efficacy were the focus of clinical change. The current study is the first one analyzing the change of specific self-efficacy verbalizations about new situations within a non-clinical sample, but additional studies exploring the impact of clinical strategies as a function of flexible or rigid patterns of behaviors and sensitivity to certain kind of contingencies are necessary. Likewise, besides the change of self-efficacy verbalizations to novel situations, further experimental studies addressing issues (break, transfer, transformation, etc.) concerning the relation between self-efficacy verbalizations and subsequent behaviours may provide results with important applied implications that will help to bridge the gap between studies in the basic and applied arenas.

Authors' note

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