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Seeking out fun failure: how positive failure feedback could enhance the instructional effectiveness of CALL mini-games

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0. <u>Abstract</u>

This study addressed the motivational affordances of a game design feature, viz. *positive failure feedback* (PFF) for tutorial CALL practice. In commercial off-the-shelf games, PFF has been praised for its positive effects on player motivation. To test the hypothesis that PFF may increase learner motivation in tutorial CALL, a within-subjects experimental design was used; learners (N=32) practised English dative alternation using three versions of a speeded grammaticality judgment task, which differed with respect to the presence of PFF and fantasy. Descriptive statistics of the questionnaire data indicate that fantasy and PFF may have increased immersion; inferential statistics show that there were strong significant correlations between immersion, intrinsic motivation, and willingness for future practice. Somewhat in contrast with the questionnaire data, post-experimental interviews pointed out that PFF also led to frustration, and may distract from the learning task. These findings suggest a) that fantasy and PFF may increase motivation and time on task, and could in this way strengthen the instructional effectiveness of controlled practice, but also b) that cognitive load may play a mediating role. Future research could zero in on the relation between PFF, motivation, and automatization, the potential mediating role of cognitive load, and the effects of practice on more communicative L2 use.

1. <u>Introduction</u>

Controlled practice, defined here as learning aimed at improving performance of specific routines as a part of acquiring more complex skills, is considered a necessary step towards the achievement of skilful behaviour in many areas of human development (Anderson et al., 2004),

including the learning of a second language (L2) (DeKeyser, 2008). While tutorial CALL

(Hubbard & Bradin Siskin, 2004) may offer exactly such practice, drawing this card – often

referred to as *drilling* – entails at least three challenges. First, explicit focus-on-forms practice

needs to engage learners foremost in meaningful L2 processing (Wong & VanPatten, 2003).

Secondly, Dörnyei (2009) writes that "the key to the effectiveness [of controlled practice] is to

design interesting drills that are not demotivating" (p. 289). Ideally, L2 practice environments

catalyse self-sustained and potentially intrinsically motivated types of behaviour, so that

learners are willing to practise without the teacher present. A third and related challenge is that

the corrective feedback (CF) inherent in L2 practice with CALL could harm motivation

(Robinson, 1991; Schulze, 2003).

This study addresses the latter two challenges, and introduces to CALL research a notion of

game design, viz. *positive failure feedback* (PFF), in an attempt to make controlled practice

motivating. In commercial off-the-shelf games, PFF signals that the player has failed, but – since

PFF refers to the representational context of the game and includes elements of fantasy and/or

story – is at the same time "a *vivid* demonstration of the players' agency in the game"

(McGonigal, 2011, p. 66; emphasis added). Such feedback has been found to elicit positive

emotional responses to in-game failure (Ravaja, Saari, Salminen, Laarni, & Kallinen, 2006). The

current study hypothesized that in tutorial CALL practice, fantasy and PFF (or vivid CF) may be

associated with an increased sense of competence and immersion. It addresses the following

research questions:

1. How do fantasy and PFF (or vivid CF) affect learners' perceived competence and
   immersion?
2. How are perceived competence and immersion related to learners' intrinsic
   motivation, and to their willingness for future practice?

2. Method

A within-subjects experimental design was used: participants practised English dative alternation in 3 different versions of a grammaticality judgment task; the order of these 3 conditions was randomized per participant. The learners (N=32) were intermediate-level Dutch-speaking students in the 3rd and 4th year of secondary education in Belgium. English Dative alternation is known as a complex and rather difficult learning problem for L1 and L2 learners alike (Pinker, 1989), and for L2 learners, specifically, feedback is considered necessary in order to master it (Carroll & Swain, 1993).

In all three conditions, learners had to judge the grammaticality of a random selection drawn from 36 sentences. In order to stimulate automatization of the target structure, the task was speeded: learners were asked to judge as many sentences as possible within 60 seconds, and there was an additional 10-second time limit per sentence. For correct responses, a green checkmark was shown, and positive feedback was given in the form of points (with sound support).

Two of the three conditions comprised a fantasy, viz. a detective (the learner) that questions witnesses using a videophone. One fantasy condition (B, figure 2) included plain CF, the other (C, figure 3) contained vivid CF. Condition A contained no fantasy and plain CF (figure 1).

Plain CF was displayed as a red cross above the button corresponding to the learner's judgment, complemented with a sound effect which may be best described as an 'incorrect' sound typical of quiz shows. Vivid CF comprised the same red cross (without the 'incorrect' sound) and any of three animations with sound support (an electric shock, water filling the screen, and an alien flying over), as well as the current witness's facial expression changing to horrified or angry. In combination with 7 witnesses (for which celebrities were used), these animations resulted in 21 possible forms of vivid CF. User tests and best practices in game design (Swink, 2006) indicated that such variation in vivid CF was necessary.

design feature	condition A	condition B	condition C
fantasy	no	yes	yes
visual CF	red cross	red cross	red cross + animation
auditory CF	'incorrect' sound	'incorrect' sound	animation sound

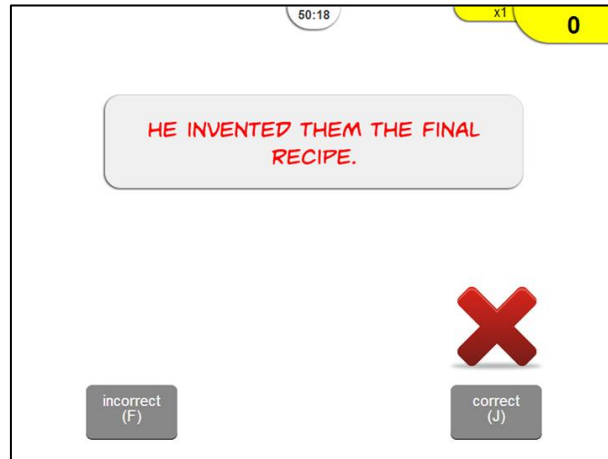Table 1: three conditions differing with respect to fantasy and CF
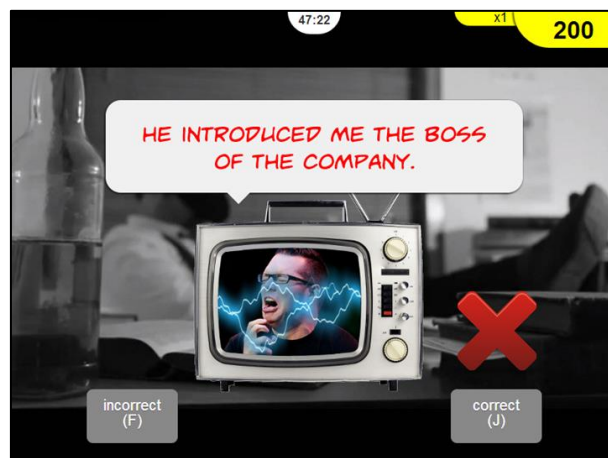

Figure 1: condition A

Figure 2: condition B

Figure 3: condition C

Before the experiment, learners completed a language test and were instructed on dative alternation. Then, they were asked to practise twice in each condition. After each condition, they filled out a questionnaire with 7-point Likert scale items on perceived competence (6 items; Cronbach's α = .8), perceived immersion (9 items; α = .88), interest/enjoyment (7 items; α = .84) (Ryan, Rigby, & Przybylski, 2006), and their willingness for future practice (1 item), as well as single items on cognition-oriented perceptions (e.g. perceived difficulty). The order of items was randomized in each questionnaire. A post-test concluded the experiment. Analysis of the language tests is outside the scope of this paper.

3. Results and discussion

For research question 1, comparisons of the boxplots show that perceived competence is not likely to vary significantly between the conditions, but that the condition might affect immersion. Specifically, fantasy and PFF could have increased immersion. Further statistical analyses will be conducted to draw more firm conclusions.
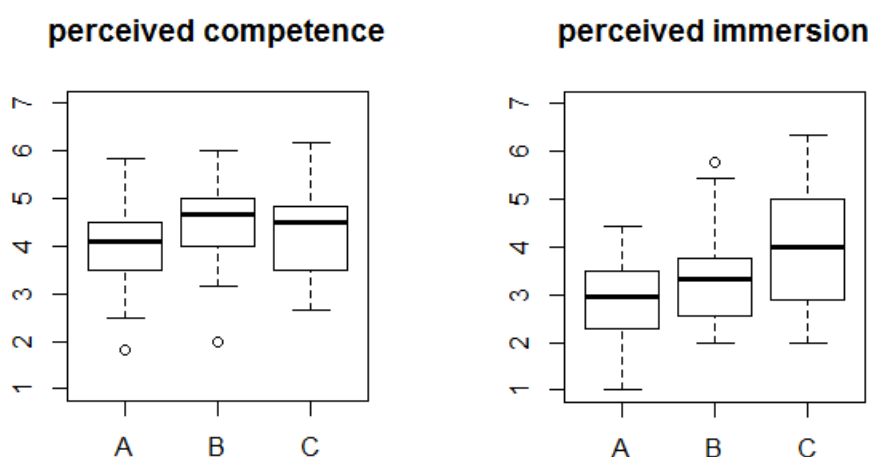

Figure 4: boxplots of perceived competence and immersion for each of the conditions

For research question 2, medium-sized correlations were found between perceived competence and interest/enjoyment (r = .43, p < .01) and willingness for future practice (r = .37,

p = .01); immersion was strongly correlated to interest/enjoyment (r = .66, p < .01) and willingness for future practice (r = .61, p < .01). This suggests that learners with higher perceived competence and immersion are likely to be more intrinsically motivated and to practise more.

variable	1.	2.	3.	4.
1. perceived competence	—	.08	.43**	.37*
2. perceived immersion		—	.66**	.61**
3. interest/enjoyment			—	.69**
4. willingness for future practice				—

Table 2: Pearson's *r* correlation coefficients for research question 2, adjusted for multiple comparisons using Holm's method (** *p* < .01 ; * *p* < .05)

Post-experimental interviews were held with 6 learners. Perhaps surprisingly, nobody preferred the version with PFF: 5 interviewees preferred B, 1 preferred A. They found the PFF distracting and even frustrating. One learner remarked, however, that despite his preference for version B, he enjoyed the PFF, and even deliberately failed a couple of times to find out what would happen. While this is consistent with reports of gamers that actively seek out failure during play (McGonigal, 2011), designers of game-like learning environments may need to be wary of using PFF, as it may result in cognitive load that hinders learning (see also deHaan, Reed, & Kuwada, 2010).

4. <u>Conclusions</u>

In a skill acquisition perspective on L2 development (DeKeyser, 2008), considerable amounts of practice are necessary to consolidate the effects of instruction. The findings of this study suggest that fantasy and PFF may have positive effects on learners' motivation, which may stimulate further practice and L2 learning. This implies that vividness needs to be considered in the design of tutorial CALL feedback. Future research could focus on the precise relation between vividness of CF and (the amount of) controlled practice, and its effects on automatization and transfer to other tasks which involve more communicative L2 use, but also on the relations between PFF, cognitive load and L2 development.

5. <u>Acknowledgements</u>

6. <u>References</u>

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