XXX CONGRESO INTERNACIONAL DE LA SOCIEDAD ESPAÑOLA DE PSICOLOGÍA COMPARADA
Ávila, España, 12-14 de septiembre de 2018

The role of aversiveness in the relationship between intolerance of uncertainty and inflexible avoidance

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Introduction

The study of avoidance behaviour is considered relevant to improve our understanding of anxiety disorders, which are commonly characterized by the presence of undue avoidance behaviours (Endrass et al., 2011; Gillan et al., 2014). On the other hand, Dugas et al. (2001) defined intolerance of uncertainty as "the excessive tendency of an individual to consider it unacceptable that a negative event may occur, however small the probability of its occurrence". One of its two factors, Prospective Intolerance of Uncertainty, has been defined as a factor leading to excessive responding in uncertain situations (Kraemer et al., 2014, Oglesby et al., 2013). Thus, uncertain avoidance situations may be taken as a relevant scenario to examine the role of intolerance of uncertainty as a factor that facilitates excessive and inflexible avoidance behavior.

Flores et al. (2018) found evidence that **Prospective Intolerance of Uncertainty (P-IU) is associated with inflexible avoidance behaviour**. Specifically, healthy participants learned in a free-operant discriminative task to avoid an aversive sound, and were tested in extinction to measure the sensitivity of avoidance responses to the devaluation of the sound aversiveness. The results showed that an increase in P-IU was positively associated with insensitivity to outcome devaluation. This association was still significant even when trait anxiety was controlled for. These results suggested that P-IU may be a vulnerability factor for inflexible avoidance.

Objective

To **replicate** Flores et al. (2018)'s results:
To study avoidance behaviour using a reinforcer devaluation procedure to evaluate the extent to which P-IU is related to insensitivity to devaluation.

Method

After a Pavlovian phase (Phase 1), we used a free-operant discriminated avoidance procedure (Phase 2). Participants pressed two different keyboard keys to avoid a highly aversive noise (the US) presented to either the right or left ear. After a Devaluation phase (Phase 3) where we reduced the noise volume presented to one of the ears, participants went through a Test phase (Phase 4) where the noise was never administered (see Figures 1 and 2).

N = 79

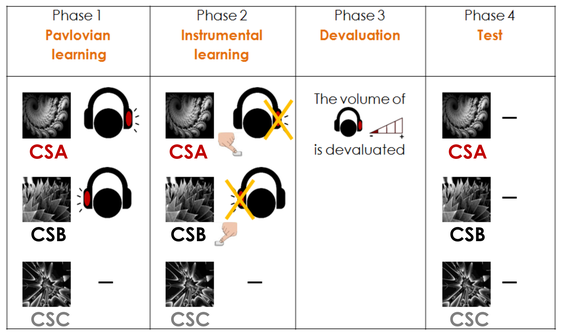

Figure 1. Design and phases of the Experiment.

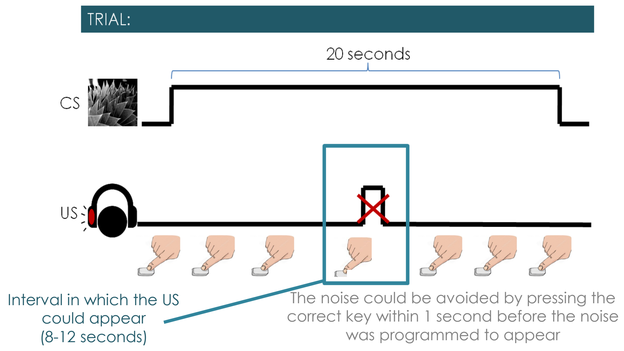

Figure 2. Procedure of the Experiment, specifically the instrumental learning phase. Pavlovian learning phase was similar but without the possibility to respond, and the Test phase without the noise (although participants were not explicitly informed about this).

- **P-IU** was measured with the Spanish adaptations of the Intolerance of Uncertainty Scale: IUS (Freeston et al.,1994; adaptation: González Rodríguez et al., 2006).
- **Inflexible avoidance** was inferred from insensitivity to the reduction in the sound volume made in the Devaluation phase. A sensitive performance would entail less avoidance responses to A than to B in the Test phase. An insensitive performance would entail similar avoidance responses to A and B. Insensitivity to devaluation was calculated as:

$$\frac{\text{number of responses to CSA} + 1}{(\text{number of responses to CSA} + 1) + \text{number of responses to CSB}}$$

- **Outcome aversiveness ratings** were asked after the Pavlovian phase. They were given on a 0 (*Non aversive at all*) to 9 (*Extremely aversive*) rating scale.

This research was supported by Grant PSI2014-56061 of the Spanish Ministerio de Economía y Competitividad, by a Marie Curie International Outgoing Fellowship within the 7th European Community Framework Programme to BV, and by the Plan Propio de Investigación de la Universidad de Málaga, Programa de Fortalecimiento de las Capacidades en I+D+I en las Universidades 2014-20150, Fondos FEDER, to AF .

Results

The relationship between P-IU and inflexible avoidance was **MODERATED** by the participants' ratings of outcome aversiveness:

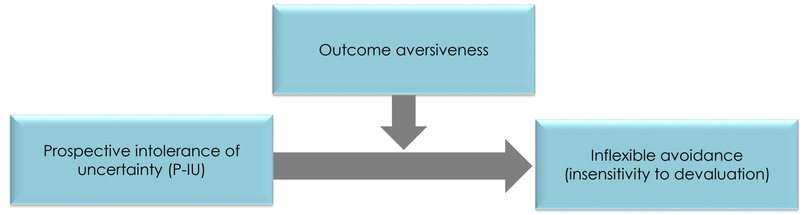

Figure 3. Diagram of the conceptual moderation model for our results.

Specifically, the significant association between P-IU and insensitivity to outcome devaluation was found to be conditional upon **high** aversiveness ratings (see Table 1 and Figure 4):

The interaction P-IU x Outcome aversiveness was significant: *b* = 0.005 [.001, .010]

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Conditional effect of X on Y at values of the moderator(s):
   Response      Effect          se           t           p        LLCI        ULCI
   -2,0125      -,0108       ,0067     -1,6296      ,1074     -,0241      ,0024
    ,0000      -,0001       ,0035     -,0206      ,9836     -,0070      ,0069
   2,0125       ,0107       ,0050      2,1492      ,0348      ,0008      ,0206
```

Outcome aversiveness ratings:
→ Low
→ **Medium**
→ **High**

Table 1. Output of the PROCESS package implemented with SPSS for moderation analysis. Relationships between P-IU and insensitivity to outcome devaluation moderated by aversiveness ratings (low, medium and high) can be observed.

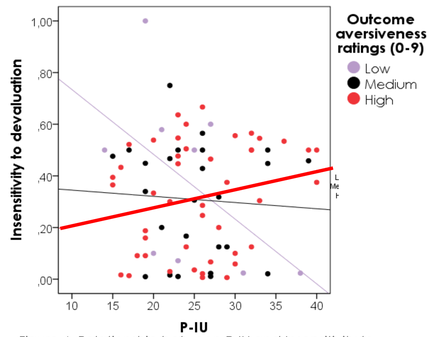

Figure 4. Relationship between P-IU and Insensitivity to devaluation in the three levels of outcome aversiveness ratings (low, medium and high) .

Conclusions

We **replicated Flores et al. (2018)**: It seems that prospective intolerance of uncertainty predisposes to the acquisition of inflexible avoidance behaviour in uncertain situations.

Interestingly, **new information was found**: the relationship between P-IU and inflexible avoidance was moderated by the participants' ratings of outcome aversiveness. Specifically, the significant association between P-IU and insensitivity to outcome devaluation was found to be conditional upon high aversiveness ratings. In other words, intolerant of uncertainty people are easily engaged in inflexible avoidance only if aversiveness is high enough.

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