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Effects of Processing Mode, Valence, Depression, and Self-esteem on Generalization

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Dissertação de Mestrado

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by

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We all think that the way that we make sense about the world is the best way. […] I can often be tempted to think "Why on Earth would you not want to do it my way?". But when other people do that to me, I find it awful. So, the part of my sensemaking about the world that I really like is curiosity. And I think that that can shut down curiosity rather than enable it. […] If something makes sense to you and that is why you believe it, that is not a curious way to be about the world. […] That is the thing that I want to see. I want to see people get curious and try and learn.

Hank Green

Index

List of Tables

Abstract

It is believed that abstract processing mode leads to more generalization than concrete processing mode and that depression moderates this relationship for negative generalization, whilst self-esteem plays this role for positive generalization. However, no study produced a control condition for processing mode, so it has not been possible to determine whether abstract or concrete processing influence generalization. Additionally, statistical procedures used in previous studies to assess moderation are questionable. Two studies were designed to resolve these issues. The pre-experimental Study was a survey that collected situations that 62 undergraduate students considered most common in their daily university lives, which would be used to create a generalization task for the experiment. Most situations fell under academic or social domains. Results are useful for similar studies with samples from different universities across Brazil. In the experiment, 531 experienced with university life volunteers were randomly assigned by processing mode into one of three conditions (abstract, control, concrete) and by valence of generalization into one of two conditions (negative, positive), and the effects of these variables on generalization were measured. Depression and self-esteem levels were assessed so moderation effects could be tested. Concrete processing led to a significant decrease in positive generalization. No significant moderation effect was found. Theoretical implications of these findings are discussed and a model involving depression, self-esteem and generalization is theorized.

Keywords: processing mode, valence, depression, self-esteem, generalization

Resumo

Acredita-se que modo de processamento abstrato leva a mais generalização do que concreto e que depressão modera essa relação para generalização negativa, enquanto autoestima desempenha esse papel para generalização positiva. Porém, nenhum estudo produziu uma condição controle para modo de processamento, então não tem sido possível determinar se a generalização é especificamente influenciada por processamento abstrato ou concreto. Adicionalmente, procedimentos estatísticos utilizados em estudos anteriores para avaliar moderação são questionáveis. Dois estudos foram delineados para resolver essas questões. O estudo pré-experimental foi um levantamento que coletou as situações que 62 estudantes universitários consideravam mais comuns em seus cotidianos, para criar a tarefa de generalização do experimento. Situações majoritariamente encaixaram-se em áreas acadêmicas ou sociais. Resultados são úteis para estudos similares em amostras de diferentes universidades do Brasil. No experimento, participantes foram alocados aleatoriamente por modo de processamento em uma de três condições (abstrato, controle, concreto) e por valência da generalização em uma de duas condições (negativa, positiva). Os efeitos dessas variáveis sobre a generalização foram mensurados. Depressão e autoestima foram avaliadas para testar efeitos de moderação. Processamento concreto levou a uma diminuição significativa em generalização positiva. Nenhum efeito significativo de moderação foi encontrado. Implicações teóricas dos achados são discutidas e é teorizado um modelo envolvendo depressão, autoestima e generalização.

Palavras-chave: modo de processamento, valência, depressão, autoestima, generalização

Resumo expandido

A generalização é um processo cognitivo importante envolvido em diversos transtornos mentais, com destaque especial para a depressão (Beck, 1976; Blake et al., 2016 Klar et al., 1997; Ozdel et al., 2021). A autoestima parece estar relacionada tanto com a generalização (Brown & Dutton, 1995; Kernis et al., 1989; Negovan & Bagana, 2011) quanto com a depressão (Battle, 1978; Roberts & Monroe, 1994, Silverstone & Salsali, 2003; Waligórska et al., 2022). Neste contexto, surgiu o interesse em investigar experimentalmente as causas da generalização. Tem-se averiguado que processar eventos e ações de maneira abstrata leva indivíduos a fazerem diferentes tipos de generalização mais do que quanto estes se engajam em um processamento concreto (Van Lier et al., 2014; Van Lier, Moulds et al., 2015; Van Lier & Raes, 2018; Van Lier, Vervliet et al., 2015). Embora uma condição controle não tenha sido criada na área até então, esses estudos concluem que é o processamento abstrato que leva ao aumento das generalizações. No entanto, não há como saber se este é o caso, ou se é o modo de processamento concreto que tem gerado diminuição nas generalizações, ou ambos. Além disso, estudos sobre o efeito do modo de processamento sobre a generalização positiva têm sugerido que a autoestima modera essa relação (Van Lier, Moulds et al., 2015; Van Lier & Raes, 2018), enquanto um estudo sugere que a depressão modera o efeito do modo de processamento sobre a generalização negativa (Van Lier et al., 2014). Todavia, tais estudos têm aplicado procedimentos estatísticos discutivelmente inadequados para responder a esse tipo de pergunta. Nesses trabalhos, as variáveis consideradas moderadoras têm sido tratadas como variáveis independentes nos modelos estatísticos utilizados (Van Lier et al., 2014; Van Lier, Moulds et al., 2015; Van Lier & Raes, 2018; Van Lier, Vervliet et al., 2015). Entretanto, Hayes (2022) apresenta um método estatístico mais apropriado para se avaliar um efeito moderador que verifica se

o efeito de uma variável independente sobre uma variável dependente dependerá dos níveis de uma variável moderadora. A dissertação apresentada aqui visa esclarecer o efeito do modo de processamento sobre as generalizações de valência negativa e de valência positiva, a partir da utilização de uma condição controle. Também é examinado o efeito de moderação da depressão e da autoestima nesse processo com o emprego de procedimentos estatísticos mais adequados. Para tanto, dois estudos foram conduzidos. O Estudo 1 serviu para levantar situações típicas do cotidiano universitário para montar a tarefa de generalização utilizada no Estudo 2, de modo que os participantes do segundo estudo respondessem a uma tarefa cujo conteúdo lhes fosse relevante, conforme orientado por Klar et al. (1997). O Estudo 2 buscou atingir os objetivos desta dissertação aqui descritos.

Estudo Pré-Experimental

Introdução

Este estudo objetivou conferir maior validade ecológica ao experimento do Estudo 2, visto que possibilitaria os participantes do estudo seguinte a responderem questões sobre situações familiares aos seus cotidianos.

Método

Sessenta e dois estudantes universitários responderam a um questionário em que deviam nomear sete situações que consideravam comuns a seus cotidianos universitários. Para cada situação, deviam nomear dois possíveis desfechos: um positivo e um negativo. Eles também avaliavam o quão positivos e negativos eram esses desfechos de acordo com suas próprias percepções. Em seguida, respondiam a um questionário de dados sociodemográficos. A análise dos dados foi feita de forma qualitativa, por meio de uma identificação categorial realizada por dois juízes.

Resultados e Discussão

As situações nomeadas pelos participantes foram colocadas em diferentes categorias e as doze mais frequentes foram selecionadas, pois isso significaria que estas são as situações mais familiares para a maioria dos estudantes universitários. Com essas doze temáticas de situações e os desfechos que seguiram delas, a tarefa de generalização do Estudo 2 pôde ser criada. A maioria das situações mais frequentes eram sobre assuntos acadêmicos ou assuntos relacionados à socialização, o que está congruente com a literatura (Klar et al., 1997). Os resultados aqui obtidos podem servir para a elaboração de outros estudos, futuramente, que sejam parecidos com o Estudo 2 desta dissertação. Como se trata de um estudo qualitativo, deve-se destacar que tamanhos de efeitos estatísticos e valores de *p* relativos aos resultados não podem ser estimados.

Experimento

Introdução

Apesar das suposições de que o modo de processamento abstrato leva pessoas a generalizarem mais (Van Lier et al., 2014; Van Lier, Moulds et al., 2015; Van Lier & Raes, 2018; Van Lier, Vervliet et al., 2015), é necessário conferir se o modo de processamento concreto também não é responsável por essa diferença. Esperou-se que o processamento abstrato levasse a mais generalizações do que o concreto e do que a condição controle, sendo que estas duas últimas não difeririam significativamente entre si. Além disso, o único estudo dessa tradição que manipulou valências não discutiu esse assunto, apesar de ter encontrado que os participantes tenderam a generalizar mais na condição positiva do que negativa (Van Lier & Raes, 2018). Esperou-se que esses resultados se repliquem pois utilizamos uma amostra não-clínica, e sabe-se que generalizações negativas tendem a aparecer mais entre pessoas com transtornos

psicológicos (Battle, 1978; Roberts & Monroe, 1994, Silverstone & Salsali, 2003; Waligórska et al., 2022). Também seria importante checar se os efeitos moderadores da depressão e autoestima se manteriam quando analisados por uma ótica estatística mais adequada.

Método

O delineamento experimental foi entressujeitos 3 (modo de processamento: abstrato, controle, concreto) x 2 (valência: positiva, negativa). Os 531 respondentes participaram da pesquisa por videochamada e foram aleatoriamente designados às diferentes condições do estudo. Eram induzidos a pensar de forma concreta, abstrata ou simplesmente se distraíam com um jogo na condição controle. Em seguida, respondiam à tarefa de generalização, caindo na condição positiva ou negativa. Escores de depressão e autoestima foram mensurados por meio das versões brasileiras da subescala de depressão da DASS-21 (Vignola & Tucci, 2014) e da Escala de Autoestima de Rosenberg (Hutz & Zanon, 2011), respectivamente, bem como outras variáveis relevantes, a mencionar: familiaridade com as situações da tarefa de generalização, nível de certeza sobre as próprias generalizações e nível de controle que os participantes de forma geral julgavam ter sobre os desfechos das situações apresentadas na tarefa de generalização,

Resultados e Discussão

Um grande efeito principal significativo da valência sobre generalização foi encontrado, mas não houve efeito significativo do modo de processamento sobre a generalização. No entanto, houve interação entre essas duas variáveis independentes. Em generalizações positivas, indivíduos generalizaram significativamente menos quando induzidos a processar de forma concreta do que na condição controle e na condição abstrata, as quais não diferiram significativamente entre isso. Isso sugere que é

o processamento concreto que leva à diminuição da generalização positiva, não o processamento abstrato que leva ao aumento dela. Efeitos de moderação significativos não foram encontrados, mas houve correlações significativas entre depressão, autoestima, e generalizações positivas e negativas. Com base nesses achados no que já se sabe sobre essas variáveis (Battle, 1978; Brown & Dutton, 1995; Kernis et al., 1989; Negovan & Bagana, 2011; Roberts & Monroe, 1994, Silverstone & Salsali, 2003; Waligórska et al., 2022), é sugerido um modelo teórico em que a autoestima é um preditor negativo da depressão, enquanto a generalização negativa é um preditor positivo da depressão.

Considerações Finais

Foi produzida evidência favorável à ideia de que processar um evento de forma concreta pode levar as pessoas a fazerem menos generalizações positivas sobre ele. A discrepância da literatura com esses achados aponta para as implicações teóricas relevantes deles. Além disso, sugere-se que o delineamento de pesquisa empregado no Estudo 2 seja utilizado em estudo sobre outros tipos de generalizações.

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Theoretical Contextualization

Carlos got food poisoning after eating one specific meal in his university's restaurant. Now he avoids that place and prefers to spend extra money for lunch from other places because he thinks that he will get food poisoning again if he eats in there one more time. Maria practices martial arts and is competing for the first time. She won her first match after using one particular technique. Now, she is confident and intends to use that same technique in every other match that she participates for the rest of the championship, as she is sure it will work just as well on other opponents. When Bruno was a teenager, a close friend told him that he was too loud and that this type of behavior bothered people around them. Years after that, he is still socially anxious and hypervigilant about his manners because he strongly believes that he may bother people around him if he gets too comfortable.

One aspect shared by all three of these stories is that they are examples of overgeneralizations. Beck (1976) conceptualized overgeneralization as an "unjustified generalization on the basis of a single incident" (p. 94). Most of the literature reviewed for the construction of this master's dissertation, which is cited throughout this work, uses the terms "overgeneralization" and "generalization" in an interchangeable fashion, conveying the same meaning. For simplification purposes, exclusively the term "generalization" will be used here. Our main goal was to test the effects of processing mode and valence on generalization. We also sought to investigate the moderation roles played by depression and self-esteem in these effects. This theoretical contextualization is presented next in order to justify this dissertation's specific goals.

Relationship among Generalization, Depression, and Self-esteem

Earlier studies have plainly shown the relationship underlying generalization and depression (e.g., Carver & Ganellen, 1983; Carver et al., 1985; Ganellen, 1988). Klar et al. (1997), however, pointed out a few flaws regarding the research about said relationship. Firstly, these studies used poorly correlated measures to assess generalization instead of addressing it more directly. Secondly, those studies solely focused on generalizations about negative situations.

In order to address the first issue, Klar et al. (1997) implemented a method from the judgment-under-uncertainty literature (e.g., Tversky & Kahneman, 1974) as a more direct measure for generalizations. Instead of responding to low-validity scales, participants would read short descriptions of hypothetical day-to-day events followed by an outcome (e.g., "You ran for class council and were elected by a majority of votes"). Subsequently, they were required to estimate the probability (ranging from 0 to 100%) of that same outcome repeating itself in the case of the same event happening for a second time. Questions were structured as, for example: "How probable is it that if you ran for class council next year you'll get a majority again?" The generalization measure would correspond the mean of the percentages given by the participants as responses to each of the questions.

Klar et al. (1997) resolved the second issue by studying positive, negative, and neutral generalizations altogether. Their observations allowed them to develop a model in which depressed people tend to generalize negatively more than non-depressed people. The opposite is true for positive generalizations. Across depressed and non-depressed people, positive generalizations tend to be higher than negative ones. No differences were found between the two groups regarding neutral generalizations.

More recent studies also sought out to study the relationship between generalization and depression or other mental disorders (e.g., Thew et al., 2017; Van den Heuvel et al., 2012; Yang & Liu, 2022). For instance, Van den Heuvel et al. (2012) applied multiple measurements for generalization in samples of patients diagnosed with major depressive disorder (MDD) or borderline personality disorder and in a non-clinical sample. As expected, participants diagnosed with MDD showed higher levels of negative generalization and lower levels of positive generalization when compared to non-clinical participants. In another study conducted by Thew et al. (2017) in order to investigate the effect of self-critical thinking on generalization with two clinical groups (patients with MDD and patients with eating disorders), it was observed that depressed individuals, as well as individuals with eating disorders, generalized more than individuals from the control group. By using an emotional autobiographical memory measure, a recent study concluded that depressed individuals made more generalizations than healthy control participants (Yang & Liu, 2022). All these findings corroborate the model proposed by Klar et al. (1997).

Aside from mental disorders, self-esteem also seems to be associated with generalization. Depressed individuals tend to have lower self-esteem (Battle, 1978; Roberts & Monroe, 1994, Silverstone & Salsali, 2003; Waligórska et al., 2022) and generalization is a typical cognitive distortion in depression (Beck, 1976; Blake et al., 2016 Klar et al., 1997; Ozdel et al., 2021). In fact, self-esteem has been negatively correlated to negative generalization (Negovan & Bagana, 2011). Generalization can mediate the effect of low and high self-esteem on the perception of failure by negative feedback (Kernis et al., 1989). It has additionally been suggested that low self-esteem individuals tend to generalize more about the negative implications of failure (Brown &

Dutton, 1995). More recently, it has been shown that self-esteem, together with adaptative perfectionism, is a negative predictor of depression (Chai et al., 2019).

Therefore, many studies support the existence of a relationship among generalization, depression, and self-esteem. It has been argued, however, that not much has been discovered about what causes generalization (Hermans et al., 2013). It is questionable to assume that depression and self-esteem, for instance, are causes to generalization because said studies have not manipulated such variables experimentally. A better understanding about factors that causally impact generalizations could shed more light into its relationship with depression and self-esteem.

Processing Modes and Generalization

In the context of scarcity of experimental studies, some authors conducted experiments to test the effect of abstract and concrete processing modes on generalization (Van Lier et al., 2014; Van Lier, Moulds et al., 2015; Van Lier & Raes, 2018; Van Lier, Vervliet et al., 2015). This subsection conceptualizes abstract and concrete processing modes and explains their relationship with generalization.

According to Watkins (2008), abstract processing mode consists of mental representations that convey meaning of events and actions, such as why an action happens as well as its ends and consequences. This level of processing, also known as high-level, focuses on the desirability and on the importance of the consequences generated by events and actions. The author defines concrete processing mode as more contextual mental representations that convey the means by which (how) actions and events occur. Such processing level, also known by low-level, concerns the viability and planning about consequences of events and actions.

Watkins (2008) explains that these processing styles can differentially impact how one perceives someone else's behavior or their own. The author provided a helpful example about laziness and tiredness to illustrate the concept of abstract and concrete processing. After observing an individual constantly yawning, distracted, and insufficiently committed to a task, one can interpret this set of behaviors under two manners.

One could perceive such behaviors in a more generalized way, as part of a more global and fixed trait (e.g., laziness: "I think Bruno is a lazy person because he never commits to a task, is always distracted, and constantly yawns"), which would constitute high-level abstract processing; or one could grasp the situation with a low-level concrete processing mode, thinking that said behaviors establish a transitory state that is specific to that situation in particular (e.g., tiredness: "I think Bruno is tired right now since he is having trouble committing to this task, yawned a lot today and has been really distracted this morning"), in a way that is less generalized and more focused on context-specific details.

It can be suggested that abstract and concrete processing modes underlie different cognitive processes. Thus, Watkins (2008) argues that abstract processing of negative situations can be maladaptive since it can foment negative generalizations. For instance, after a single failure in a task, an individual can generalize that they are useless after processing the event under an abstract thinking style, as they would think of a global and fixed trait. If they were to process it under a concrete manner, difficulties that were specific to the situation could be considered, which would in turn mitigate the negative generalization.

Van Lier et al. (2014) were pioneers in testing and finding the effect of processing mode on generalization: in an experiment conducted with late adolescents,

they induced half of the participants to think in an abstract way and the other half to think in a concrete way. Next, volunteers responded to a generalization task. First, they went through an acquisition phase so they could learn that, whenever they sat in a train wagon of one color (blue for one half of the sample and red for another half), something negative would follow. They also learned that, when they sat in a wagon of another color (red for the first half of the sample and blue for the second half), something neutral would follow. The blue and the red wagon were identical except for the color. Then, they were presented to images of the same wagon but with different shades of color: seven images gradually more blue and less red for the first half and the other way around for the second half. After that, they responded in as expectancy scale ranging from 0 to 10 how much they expected something negative would happen in each of the seven wagons. The result of the generalization measure depended on the expectancy scale and on how distant the color of the wagon was relatively to the color in which volunteers had learned that negative outcomes would happen during the acquisition phase.

The difference between abstract and concrete conditions was only found amongst highly dysphoric participants: they made more generalizations when induced to think abstractly than when induced to think concretely. With not as high levels of dysphoria, processing mode did not affect negative generalizations. This means that there was an interaction effect of processing mode and dysphoria (which was operationalized by a depression scale) on negative generalizations. The authors pointed out that the lack of a control group was a limitation in their study.

A similar study conducted with sport participants (Van Lier, Moulds et al., 2015) found an effect of processing mode on positive generalization. Athletes who were induced to think of abstract aspects of their most recent victories tended to generalize

more about the future than athletes who thought of concrete aspects of these events. That is, participants from the abstract condition estimated higher probabilities of obtaining another success on a competition in the future than the ones from the concrete condition.

Such results are consistent to what Watkins (2008) theorized. Processing mode has an effect on generalizations whether they are negative or positive. However, this study about positive generalizations (Van Lier, Moulds, et al. 2015) shared the same limitation as the aforementioned one about negative generalizations (Van Lier et al., 2014): the lack of a control or neutral condition. The authors also entered self-esteem as a continuous predictor in their regression model under the supposition that such construct plays an important role in how individuals estimate their successful experiences. They found a marginally significant interaction effect of processing mode and self-esteem on positive generalization, meaning that the differences in positive generalizations between the concrete and abstract group were larger among participants with high self-esteem.

The effect of processing mode on generalizations was also investigated in the context of the perception of angry faces towards the self (Van Lier, Vervliet et al., 2015). Participants were presented with angry and happy faces and, depending on the experimental condition they had been assigned, would either focus on the meaning of said faces or on sensory-perceptual aspects of them. For instance, they could think about what the face was probably thinking and why that would be the case (abstract condition) or pay attention to its physical traits, such as its shape, eyes, hair, and mouth (concrete condition). In a training phase, respondents learned that angry faces were connected to themselves whilst happy faces were not by being presented with angry faces paired to their own names and happy faces paired to another person's name. Next, they were

shown new angry and happy faces, as well as the faces from the antecedent phase, but the emotions were switched up in some of them. Faces that had been previously presented as happy were presented as angry and vice-versa and no name was paired to any of them this time.

Generalization was measured by the rate in which volunteers wrongly attributed angry faces to their own names after the training phase. That is, by seeing a few angry faces towards themselves, it could be considered generalization whenever a participant thought a new angry face was also related to them. Not surprisingly, part of the article's title was "Why is everyone always angry with me?!" (Van Lier, Vervliet et al., 2015), which can be a classic – and probably in need of clinical intervention – example of generalization if put in affirmative form ("Everyone is always angry with me"). Participants from the abstract condition tended to generalize more than participants from the concrete condition. These results were consistent with the authors' hypothesis and with the other studies about processing mode and generalizations cited in this section. Another aspect shared by this study with previous ones did not include a control condition. The authors also expected to observe a moderating effect of social anxiety in the relationship between processing mode and generalization about angry faces, but this hypothesis was not confirmed.

Van Lier and Raes (2018) were the first ones to design an experiment that not only manipulated processing mode, but also the valence of the generalizations. That is, participants were randomly assigned either to a condition where they would have to make positive generalizations or to a condition where they made negative generalizations. In each condition, three types of generalization were assessed: generalization over the future, generalization to their self-concept, and generalization to broader life domains.

Interestingly, they did not find significant main effects of processing mode (with no control condition) on most types of generalization in this study. However, a significant effect of valence was observed on generalizations over the future and to participants' self-concept. People tended to generalize more positively than negatively. This makes sense for a non-clinical sample – since non-depressed individuals tend to generalize more positively (Klar et al., 1997) – but is not further discussed by the authors. Based on how volunteers' abstract reasoning played out, they were divided into two categories: functional and dysfunctional. Depression and self-esteem levels were also assessed. With this procedure, authors could check if dispositional variables made some more vulnerable to the effects of processing mode.

The research on generalization presented so far tends to share three common aspects. Firstly, they all find some form of effect of processing mode on generalizations. This can be a main effect, in which participants induced to think abstractly generalize more than participants induced to think concretely (Van Lier, Moulds et al., 2015; Van Lier, Vervliet et al., 2015), or a moderated effect that is larger or only existent among certain groups characterized by specific dispositional variables (Van Lier et al., 2014; Van Lier, Moulds et al., 2015; Van Lier & Raes, 2018; Van Lier, Vervliet et al., 2015). Introducing this pattern of results was the aim of this subsection.

Secondly, none of the studies created a control condition for the treatment of processing mode. This can be considered a relevant limitation since this type of design makes it impossible to determine whether the effect is due to an increase in generalization by abstract processing, a decrease in generalization by concrete processing, or both. Thirdly, there is an interest in investigating the role of moderator variables in the relationship between processing mode and generalizations. However, the statistical procedures that have been employed so far may not be the best suited ones

to answer the types of questions that have been asked in previous studies. These last two common aspects are discussed in a more detailed manner in the next two subsections.

Lack of a Control Condition

There are other studies that manipulate processing mode without a control condition, but to test its impact on dependent variables that are not generalization. Many of them involve autobiographical memories (Philippot et al., 2003; Raes et al., 2008; Watkins & Teasdale, 2004; Werner-Seidler & Moulds, 2012). Others investigate the impact of processing mode on variables such as emotional vulnerability (Moberly & Watkins 2006) and proactivity and decision-making in depression (Dey et al., 2018., 2019). There seems to be a trend of overlooking the benefits creating control conditions in the processing mode field, with a few exceptions.

Illustrating, Marigold et al. (2007) conducted a series of three studies to test the impact of processing mode on how individuals of low and high self-esteem perceived issues concerning their romantic relationships. They employed a control condition in the last two studies of the series. It consisted of simply not presenting any instructions to the participants (as opposed to the other conditions in which volunteers would be induced to think abstractly or concretely through some instructions). This enabled the authors to assess the direction of the effects found in the first study of the series.

Gorlin and Teachman (2017) sought to test the effect of processing mode in goal-pursuit after a failure. Interestingly, four conditions were created: the usual abstract and concrete conditions, but also a control condition and a condition that combined abstract and concrete thinking. For the control condition, which was actually named "free-thinking condition", participants were instructed to just sit quietly and to collect their thoughts for a few minutes.

Though the bottom line of this subsection is that control conditions are important in this type of research, it is necessary to point out a crucial issue here. Van Lier et al. (2014) fittingly argued that, during no-instruction or free-thinking control conditions (e.g., Gorlin & Teachman, 2017; Marigold et al., 2007), one cannot guarantee that participants are not spontaneously engaging in one of the processing modes. This spontaneous rumination could in turn affect the measurement of the dependent variable. Therefore, such a control condition would not serve its role properly.

Nevertheless, the creation of a proper control condition is interesting because it can shed light in the causal relationship between processing mode and generalization. For exemplification purposes, suppose a control condition is properly conceived. Such an approach would reduce confusion about the theory. A consistent effect of processing mode on generalization has been found so far: people tend to generalize more when they are induced to think abstractly than when they are induced to think concretely (Van Lier et al., 2014; Van Lier, Moulds et al., 2015; Van Lier & Raes, 2018; Van Lier, Vervliet et al., 2015).

It is still left to be figured out if this difference happens because of: an increase in generalization caused by abstract processing; a decrease in generalization caused by concrete processing; or both. For instance, if a study with three conditions found significant differences in generalizations across all three conditions (i.e., concrete < control < abstract), evidence would favor the hypothesis that both processing modes influence generalizations. Or, if said study found only significant differences between one condition and the other two (i.e., concrete = control < abstract; or concrete < control = abstract), the hypothesis that only one processing mode impacts generalizations would be supported.

A control condition that absolutely stops participants from engaging in either processing mode for the duration of every phase in an entire experiment seems impracticable. On the other hand, it is worth noting that some consolidated fields in Cognitive Psychology are also not able to generate the clearest of conclusions due to similar limitations. However, researchers from such fields do not abstain from using control conditions in their experiments. Studies about the Stroop effect constitute a classic example of this methodological decision (for a more complete review on the issue, see MacLeod, 1991). The independent variable is manipulated at two levels for the experimental conditions (words that are congruent or incongruent with the colors they are written in) and at another level, a neutral one, to compare the results of the experimental conditions with. In the neutral condition, participants are usually shown colored shapes instead of words. Since shapes and words can be considered different classes of stimuli, one can argue that participants engage in different mental processes in the neutral condition and in the experimental ones.

Even though this might lead to some level of uncertainty in the interpretation of results, researchers from the Stroop effect field still prioritize the inclusion of a control condition and this is how they are able to provide a more complete picture for this phenomenon. How can this issue be solved in research concerning processing mode without resorting to free-thinking or no-instruction conditions? A more suitable control condition could involve a distractor task. This way, participants would be less likely to engage in either processing modes since they would be focused on another activity. To our knowledge, only two studies employed this strategy so far, but none of them were about generalizations (Gadeikis et al., 2017; Kornacka et al., 2019).

To investigate the effect of processing mode on emotional response after recalling a pleasant memory, Gadeikis et al. (2017) created three conditions: abstract,

concrete, and a distraction control one. The manipulation occurred in between two memory recalls. In both experimental conditions, participants read 28 statements about themselves (e.g., their mental and emotional states) but were instructed to focus either on concrete or abstract aspects of the phrases. In the control condition, they read 45 statements with external focuses, such as the structure of a bridge or a truckload of watermelons. Across all conditions, volunteers read the statements for eight minutes. They found that concrete processing led to higher happiness and heart rate variability when compared to abstract processing and distraction. The latter two did not significantly differ. This suggests that concrete thinking has an effect on their variables of interest whilst abstract thinking does not. If it were not for the control condition, this conclusion would be impossible.

The same goes for Kornacka et al.'s (2019) study, where change in negative affect was measured after a processing mode induction. They also used a control condition involving distraction and their procedure was very similar to Gadeikis et al.'s (2017), with a slightly different structure. The experimental condition phrases were also self-referential, and the control condition phrases also had external focuses. However, there were 15 sentences appearing on the screen of 40 seconds each in all conditions, totaling 10 minutes. They found effects of concrete thinking and of distraction after comparing the before and after of the induction, but no effect of abstract thinking.

Even though Gadeikis et al. (2017) and Kornacka et al. (2019) could not be completely sure that their participants from their control conditions were not engaging in processing modes, they found differential effects. Such results led them to better understanding of the effects of abstract or concrete thinking styles on their variables of interest. The research presented here follows the same rationale. By including a control level in the manipulation of the processing modes, the aim is to contribute to the

construction of a completer and more clear-cut model about the relationship between processing mode and generalization. A task popularly known to be particularly challenging was chosen to increase the chances of success in distracting participants who would execute it. This processing mode condition can be considered neutral since participants would be less likely to engage in either processing mode when going through it.

Effect of Dispositional Variables on the Effects of Processing Mode

We were also interested in better understanding the role of moderator variables such as depression and self-esteem in this broader model. This interest is shared with previous studies about processing mode and generalizations. The effect was larger or only existent in the presence, for example, of dysphoria for negative generalizations (Van Lier et al., 2014) and self-esteem for positive generalizations (Van Lier, Moulds et al., 2015). Despite finding no significant effect, Van Lier, Vervliet et al. (2015) checked for a moderation effect of social anxiety on the effect of processing mode and generalizations about anger towards the self. Van Lier and Raes (2018) also sought to investigate self-esteem's moderation effect on the relationship between processing mode and both positive and negative generalizations.

Van Lier et al. (2014) used a median-split procedure to divide their sample into two groups: high dysphoric and low dysphoric. However, Hayes and Montoya (2017) point out that one setback in this decision is that participants that score around the median end up placed in different groups, even though they are similar in the construct that is being measured. After that, Van Lier et al. (2014) treated it as an independent variable and tested its interaction effect with processing mode on negative generalization by running an analysis of variance.

The other articles did similar procedures with their supposed moderator variables. They did not resort to median-split procedures, but they did treat moderator variables as independent variables in regression models (Van Lier, Moulds et al., 2015; Van Lier & Raes, 2018; Van Lier, Vervliet et al., 2015). Then, they also checked for interaction effects between said variables and processing mode on generalizations and called it moderation.

The issue with this is that moderation can be considered a specific type of interaction in which the effect of the independent variable on the dependent variable depends, or is conditional to, a moderator variable (Hayes, 2022). For example, if the effect of processing mode on negative generalization got larger as depression scores got higher, one could affirm that depression moderates the relationship between processing mode and negative generalization. Treating depression as another independent variable in the general linear model is not the most proper way to check for a moderation effect.

A more adequate way to tackle this issue is to run a moderation analysis (Hayes, 2022). It has been suggested that self-esteem moderates the relationship between processing mode and positive generalization (Van Lier, Mould et al., 2015), and dysphoria (operationalized by scores in a depression scale) is a moderator for the effect of processing mode on negative generalization (Van Lier et al., 2014). But the proper data analysis was not used. So, another of the goals in this dissertation is to test these moderation effects but with more accurate statistical procedures.

Overview and Goals of the Studies

The main goal of this dissertation was to experimentally test whether abstract or concrete processing mode impacts generalization by adding a control condition. We also intended to compare generalizations by valence to replicate Klar et al.'s (1997) model.

The third goal of this study was to investigate the roles of depression and self-esteem in the relationship between processing mode and generalization by employing more adequate statistical procedures. The measurement of other variables, which are detailed in the Experiment section of this dissertation, allowed us to perform exploratory analyses and to propose a theoretical model that could explain the gaps between what is postulated in theory and what our results suggested.

With the goal of granting better ecological validity to this research, a pre-experimental study was conducted before the actual experiment. It consisted of a survey to gather which situations undergraduate students considered more common in their daily lives. The results would be used to build a generalization task that presented scenarios that were familiar to participants in the experiment per se – with a sample composed by current and former undergraduate students.

Pre-Experimental Study

Introduction

The specific goal of this study was to identify which situations undergraduate students considered more typical in their routines. We intended to use these situations on the actual experiment. This would make the experiment more likely to present familiar and relevant situations to respondents, who would be more prone to engage in the task (Klar et al., 1997). The experiment would also be provided with more ecological validity, since participants would be answering questions about their everyday lives.

Method

This was a qualitative study in the format of a survey. It was approved by the Research Ethics Committee (Appendix A).

Participants

Sixty-two university students took part in this study (30 women and 32 men), ranging from 18 to 53 years old (M = 21.79, SD = 4.53). More details about participants' graduation courses and amount of semesters they had completed to the point of the research are shown on Table 1.

Table 1
Sample Characteristics of the Pre-Experimental Study

Age		
- Minimum | Maximum	18	53
- M (SD)	21.79	(4.53)
Gender – f (%)		
- Male	32	(51.61)
- Female	30	(48.39)
Amount of complete semesters – f (%)		
- One to three	21	(33.87)
- Four to six	15	(24.19)
- Seven or above	26	(41.94)
Graduation Course – f (%)		
- Humanities related courses	28	(45.16)
- Biological Sciences related courses	12	(19.35)
- Exact sciences related courses	6	(9.68)
- Health related courses	16	(25.81)

Instruments

Survey of Typical University Situations (STUS). This instrument was composed of initial instructions followed by seven identical items that collected different answers (Appendix B). The instructions provided two examples of how the items were supposed to be answered: "going to a party from my course" and "performing a complementary activity". Each item required the naming of a different situation – in the format of a verb and an object – considered typical to the university

experience as well as two possible outcomes for said situation: one positive and one negative. The items also included ratings of how pleasant or unpleasant the positive and negative outcomes are considered to be on a scale ranging from 1 (not pleasant/unpleasant at all) to 5 (extremely pleasant/unpleasant).

Sociodemographics Questionnaire. This instrument was composed of questions about the respondent's gender, age, university course and number of semesters they have completed in the university.

Data Collection Procedure

Participants of different graduation courses were recruited from Psychology introductory classes and from the university facilities. After entering the laboratory and giving informed consent, they were presented with the research in the Google Forms platform. They answered the STUS. After that, they answered to the Sociodemographics Questionnaire.

Data Analysis Procedure

With 62 people naming 7 situations, each followed by 2 outcomes (one positive and one negative), we expected a total of 434 (62 x 7) situations and 868 (62 x 7 x 2) outcomes. These would be grouped into different categories to create the most common situations for the experiment. Since not all participants named all 7 situations, we ended up with a total of 432 situations.

Firstly, these 432 situations were separated into 7 groups. Each group contained the answer of all 62 participants for each of the 7 items of the STUS. Thus, the first 5 groups had 62 situations and the last 2 groups had 61 situations. In other words, all 62 participants answered the first item of the STUS. Therefore, the first of the seven groups contained the first situation named by each one of the participants in the first item – adding up to a total of 62 situations. This continued up until the fifth group, because, for

the sixth and seventh items, two participants did not provide answers. For this reason, both sixth and seventh groups contained only 61 situations.

Two judges found 12 themes that appeared most frequently. The first judge was the author of this dissertation, and the second judge was his supervisor. The content and frequency of each of these themes are presented in the results section of this study. Each of these themes encompassed a set of situations that fit into a specific category and were named by different participants. For example, 15 out of 62 participants cited situations later categorized as “Going to the university restaurant”. The method by which this categorization happened was that, firstly, the situations from each of the 7 groups were organized by alphabetical order by the first judge to facilitate the identification of common themes. Since no singular participant named the same situation twice, the maximum number of times one situation could appear in this study is 62: if a given situation were named by all participants.

After this step, the first judge was left with defining which positive and negative outcomes would follow each situation. The first exclusion criterion applied to outcomes that were categorized as “Necessary Consequences”. Those are outcomes that necessarily happen after the situation. When mentioning situations inside the category of “Going to the university restaurant”, for example, some participants named “being fed” as the positive outcome. Selecting this type of outcome would be problematic for the experiment because it was important that participants performed the task under some level of uncertainty. If not, there could be a risk of creating bias among the responses due to the high probability of that outcome happening. This would cause an unwanted ceiling effect and the experimental manipulation would not be able to influence the response as much.

The first judge also divided the outcomes into two types of categories: simple and mixed. Simple categories included outcomes with exclusively one theme (e.g., outcomes such as “Having a quality meal” or “Socializing with friends” for the situation “Going to the university restaurant”). Mixed categories encompassed outcomes with two or more themes, such as “Eating good food while I have fun with friends”, also for the situation “Going to the university restaurant”. Only simple categories were considered, with a few exceptions – which will be discussed further.

The top priority criterion for selecting outcomes was frequency (lower priority criteria applied to atypical cases are described further ahead). However, this criterion was chosen for a different reason than the one in the selection of situations. It had been previously determined that outcomes with frequencies that were too close to 100% could not be selected. If every participant named the same outcome to a situation, that would probably mean that said outcome characterized a necessary consequence to said situation. Similarly, rarely mentioned outcomes with frequencies that were close to 0% would be far from ideal. Selecting such outcomes could result in an opposite effect to the one that we would have with selecting necessary consequences. However, this would be equally detrimental to the experimental manipulation.

Fortunately, there were no outcomes with frequencies close to 100%. Thus, we could select the outcomes with highest frequencies in each situation. With this decision, it was possible to make sure that selected outcomes would have frequencies as far as possible from 0% and would be unlikely to be necessary consequences.

There were categories of situations in which two or more positive and/or negative outcomes appeared with the same frequency. For these atypical cases, mixed categories were considered. Sometimes, even after this step, frequencies remained the same. In these cases, the outcome that was more related to social or academic life was

selected. This decision was based on the assumption that such areas would be most familiar to the individuals (Kuiper & MacDonald, 1983), therefore making them more likely to engage in a task about them (Klar et al., 1997).

Some categories of situations did not have a single usable outcome. Unusable outcomes could have been necessary consequences or highly eccentric or specific phrases that could not be included in the experiment. In all these cases, the unusable outcomes were positive. Thus, new outcomes were created from converting negative outcomes into positive ones. For example, the category of situation "Summer class" had "time to rest for the regular semester being insufficient" as its negative outcome. After the conversion, this situation had "being able to rest sufficiently for the regular semester despite academic obligations" for its positive outcome. Lastly, the second judge saw these results and assessed if she agreed with the categories proposed by the first judge: not only in terms of situations, but also in terms of the criteria used to select both the situations and the consequences.

Results

All twelve categories of situations, as well as the positive and negative outcomes for each one of them, are shown in Table 2 in order of most frequent to less frequent situation. The percentage of each situation is relative to the entire sample, whilst the percentages of the outcomes are relative to each situation. For example, 16 out of 62 participants named a situation that was later categorized into "Group project". Therefore, approximately 25.8% of the entire sample named a situation that involved taking part in a group project. Out of these 16 individuals (i.e., 25.8% of the sample), 5 of them listed a positive outcome for taking part in a group project that involved socializing. In other words, approximately 31.3% of said 16 individuals named this type

of outcome. Since this was a qualitative study, no *p* values and effect sizes could be estimated from the results.

Table 2

Situations and Outcomes from the Pre-Experimental Study Followed by the Percentage in which They Appeared

Situation (%)	Positive outcome (%)	Negative outcome (%)
Going to a party (43.5%)	Having fun (33.3%, or 44.4%*)	Dangerous environment (25.9%)
Group project (25.8%)	Socializing (31.3%)	Poor participation of one member (43.8%, or 62.5%*)
Lunch at the university's restaurant (24.2%)	Socializing (20%, or 26.7%*)	Low quality food (66.7%)
Public transportation (22.6%)	Feeling safe (14.3%)	Being late (21.4%, or 28.6%*)
Undergraduate research project (22.6%)	Improvement of curriculum (50%, or 57.1%*)	Highly time-consuming tasks (21.2%, or 35.7%*)
Summer class (19.4%)	Getting enough rest for the regular semester **	Not enough rest for the regular semester (50%)
Class on a subject that has little to do with respondent's course (19.4%)	Learning something different (25%)	All acquired knowledge is useless (16.7%, or 25%*)
Being part of a sports team (17.7%)	Academic productivy is unaffected **	Academic productivy gets compromised (18.2%)
Overload of assignments and academic responsibilities (17.7%)	Mental health is unaffected **	Mental health gets compromised (54.5%, or 63.3%*)
Studying in the university's library (16.1%)	Being satisfied with own performance (10%)	Having an uncomfortable experience (20%)
Spending time in students' room (16.1%)	Socializing (30%)	Losing focus from responsibilities (10%)
Doing an internship (16.1%)	Professional qualification (30%)	Time management difficulties (40%)

Note: The percentage of each situation is relative to the entire sample, whilst the percentages of the outcomes are relative to each situation; * Values refer to the frequency of the outcome when mixed categories are considered; ** Missing values mean that the positive outcome was created from the corresponding negative outcome

Discussion

Most of the situations identified in this study are not exclusively related to the academic setting. This observation is even more sustained when the outcomes are considered since they give additional meaning to the situation. A group project, for example, can be considered an exclusively academic situation if its positive outcome (i.e., socializing) is overlooked.

On the other hand, there were some situations that seemed mostly social, such as being part of a sports team and spending time in the students' room. Some outcomes of such situations, however, tended to more academic implications. For example, academic productivity being unaffected or getting compromised were the outcomes of being a part of a sports team. Losing focus from responsibilities was the negative outcome of spending time in the students' room.

Such findings suggest that academic life is intertwined with social life to the sample in this study. This aligns with the assumption that these life domains are personally important to undergraduate students (Klar et al., 1997). Such findings can be taken as evidence that participants would properly engage in the experiment's generalization task.

Beside situations involving social or academic life, some of them were about more practical issues. Two of the most frequent situations found in this study were about having lunch and using public transportation. Only having lunch had a more social-related outcome, which was socializing. Even though these situations neither were related to social nor academic domains, they were empirically observed as common to a sample of undergraduate students. Therefore, it is possible to affirm that the goal of this study was accomplished for all the categories of situations that were compiled.

The strategy used for when situations did not have any usable outcomes, described in the data analysis procedure, may be a limitation to this study. Making positive outcomes out of negative outcomes means that the positive outcomes were not empirically observed. This happened for the positive outcomes in three situations: Summer class, being part of a sports team and overload of assignments and academic responsibilities. Thus, in three of the situations that would be presented in the experiment, the positive outcomes were not fully guaranteed to be familiar to participants.

However, it is worth mentioning that the situations were the ones that needed to be familiar, not the outcomes. The most important attribute of the outcomes was being uncertain. In other words, they should not be sure to happen or sure to not happen. This condition is reasonably satisfied even in these cases, since the positive outcomes were based on negative ones that satisfied the frequency criterion.

Experiment

Introduction

The main goal of this study was to check whether concrete or abstract processing mode impacts generalization. No study created a control condition to test if abstract processing mode leads to an increase in generalizations, concrete processing mode leads to a decrease in generalizations, or both. Despite this fact, every article on the theme theorizes that the effect is due specifically to abstract processing mode (Van Lier et al., 2014; Van Lier, Moulds et al., 2015; Van Lier & Raes, 2018; Van Lier, Vervliet et al., 2015).

It is known that abstract rumination can have maladaptive consequences, such as poor recovery from negative affect in comparison to concrete rumination (Ehring et al., 2007, as cited in Watkins, 2008). Watkins (2008) postulated that such consequences are due to the impact of abstract thinking on generalization in response to emotional events. This thinking style creates mental representations that focus on causes and meanings and leave out specific contextual details. By this premise, in the face of a negative event, such as failing on a test, one would be more likely to make global generalizations about themselves (e.g., "I am useless") with abstract thinking, instead of taking situation-specific adversities into account. Also, depressed individuals tend to negatively generalize more than non-depressed individuals (Klar et al., 1997). All this could explain why Van Lier et al. (2014) found that highly dysphoric people negatively generalize more when thinking abstractly than when thinking concretely.

The very nature of abstract thinking (i.e., focusing on causes and meanings and ignoring specific and contextual aspects of a situation) could also explain why individuals make more positive generalizations about their success in sports competitions when they are engaged in an abstract processing mode than when they are engaged in a concrete processing mode (Van Lier, Moulds et al., 2015). Therefore, it is reasonable to assume that it is abstract processing that causes an increase in generalizations, whilst concrete processing has no effect on them. This is the first main effect hypothesis of this study: participants would generalize more in the abstract condition than in the concrete and control conditions, and these last two would present no differences between each other.

Another goal of this study was to compare generalizations by valence (i.e., positive and negative). It is known that depressed individuals tend to make more negative generalizations than non-depressed individuals and the opposite occurs for

positive generalizations (Klar et al., 1997). Since this study relied on a non-clinical sample, which was likely to have lower scores of depression, its second main effect hypothesis, is that participants in the positive condition would generalize more than participants in the negative condition.

Regarding interaction effects, it must be considered that a difference in negative generalizations was only found amongst highly dysphoric participants (Van Lier et al., 2014). So, when looking exclusively at generalizations of negative valence, participants would not be expected to differentiate among any of the three processing mode conditions. This was not true for positive generalizations, when sports participants in fact generalized more in the abstract condition than in the concrete condition (Van Lier, Moulds et al., 2015). Therefore, the interaction effect hypothesis of this study was that no effect of processing mode would be found in the negative condition, whilst there would be an effect of processing mode on the positive condition (i.e., participants would generalize more in the abstract condition than in the concrete and control ones, with no differences between the last two).

It has been asserted that abstract thinking leads to positive and negative generalization and that the effect is stronger due to moderator variables such as depression for negative generalization and self-esteem for positive generalization (Van Lier et al., 2014; Van Lier, Moulds et al., 2015). In this study, it was intended to directly test these hypotheses not only when considering a control condition, but also when employing more adequate statistical procedures. Therefore, it was expected that depression would moderate the effect of abstract processing mode on negative generalization: differences between the abstract conditions and the concrete and control ones would tend to be bigger as the levels of depression among participants were

higher. We also expected the same structure of results concerning positive instead of negative generalization and self-esteem instead of depression.

This study also employed exploratory analyses. We were interested in checking for correlations among generalization and other relevant variables such as: controllability (i.e., the perceived degree of control participants had over the situations they were generalizing about); familiarity (i.e., how familiar participants were to the situations they were generalizing about); and certainty (i.e., how certain they were about their own generalizations). We also checked for associations among depression, self-esteem, and positive and negative generalizations.

Method

Participants

A total of 531 volunteers took part in the experiment (361 women, 160 men, and 10 non-binary people), ranging from 18 to 42 years old (M = 23.58, SD = 3.02). Among all participants, 328 of them were still undergraduate students. Out of this subsample, the number of complete semesters the participants had gone through until the moment of the data collection ranged from 1 to 16 (M = 7.1, SD = 2.81). They were from 27 different Brazilian universities, which were from different regions in Brazil. Table 3 displays more details on the respondents' graduation courses, academic degree, and university where they were or had been undergraduate students in.

All individuals had to meet four inclusion criteria: 1) being at least 18 years old; 2) being available to participate in the procedure with no interruptions, so distractions would be avoided in parts that demanded full attention; 3) having access to a computer, since the data collection was made via videocall and doing it via smartphones could cause distractions due to possible notifications popping up; and 4) having attended at

least one semester of in-person classes in a Brazilian public university at any given time between five years prior to the research and the time of the research, since the pre-experimental study was conducted before the COVID-19 pandemic and it was necessary for participants in the experiment to be familiar with the situations collected in the pre-experimental study that would be presented to them. If participants got interrupted or distracted during the procedure, they were later excluded from the sample.

Table 3

Sample Characteristics of the Experiment

Graduation Course – *f* (%)		
- Humanities related courses	344	(64.78)
- Biological sciences related courses	46	(8.66)
- Exact sciences related courses	85	(16.01)
- Health related courses	54	(10.17)
- Missing	2	(0.38)
Academic degree – *f* (%)		
- Left university before graduating	22	(4.14)
- Undergraduate student	328	(61.77)
- Graduated	114	(21.47)
- Master's degree student	45	(8.47)
- Finished master's degree	12	(2.26)
- Doctorate degree student	10	(1.89)
University – *f* (%)		
- University of Brasília	468	(88.14)
- Others	63	(11.86)

Design

This study employed a 2 x 3 between-subjects factorial design and was approved by the Research Ethics Committee (Appendix A). The two-level independent variable was valence (positive, negative) and the three-level independent variable was processing mode (abstract, control, concrete). The dependent variable was generalization, which was measured by the participants' estimation of how likely outcomes were to follow situations, after knowing that such outcomes had already followed the situations once.

Instruments and Materials

The instruments and materials used in this study are presented in chronological order of appearance, this study's procedure.

Abstract/Concrete Induction and Distractor Task. Across all three conditions, participants would first read a material that was a short description of the same scenario, which was typical to undergraduate students: "Imagine it is your first day of class in a new course. You do not know the professor or the other students. You walk into class, sit down, and notice that the professor is explaining the course's grading system". Next, their task would depend on which condition they were, as described below.

Abstract Induction. In the abstract conditions, participants had seven minutes to answer six questions the focused on abstract aspects of the scenario adapted from Van Lier, Moulds et al. (2015). Such questions required the respondents to make inferences about implications and meanings, which went beyond thinking specifically about the scenario. This material was composed by: "What does being in this situation mean to you?", "What will be the consequences and implications of you being present in this class?", "What does your presence in class say about you?", "Why are you present in this class?", "What are your impressions about the class? Why?", and "Is this class what you expected? Why?".

Concrete Induction. In the concrete conditions, participants were given seven minutes to answer a material composed by six questions focusing on the scenario's concrete aspects, also adapted from Van Lier, Moulds et al. (2015). Such questions required the respondents to think exclusively about stimuli that were present in the scenario, engaging in a more perceptual and contextual processing. This material was composed by: "Visualize the situation in your head. What do you see around you?",

"Visualize the situation in your head. What can you smell? Is the air fresh? Is it warm/cold?", "Visualize the situation in your head. What can you hear?", "Visualize the situation in your head. What physical sensations are you experiencing?", "Visualize the situation in your head. What did you do right before arriving in class?", and "Visualize the situation in your head. What else are you going to do for the rest of the day after class?".

Distractor Task. Instead of answering questions about the scenario, participants engaged in a distractor task consisting of playing Flappy Bird (https://flappybird.io/) for seven minutes if they had been assigned to one of the neutral, control conditions. This game was chosen as a distractor task because it is popularly known as difficult and demanding of attention. Our intention was to reduce the risk of participants engaging in spontaneous rumination about the scenario (and therefore processing it in any further way) by making them focus their attention on another task.

Generalization Task. This task's stimuli were selected from the pre-experimental study. This material consisted of twelve situations, which were converted into twelve items with the following structure: "Imagine you **[situation written in past tense]** and **[outcome written in past tense]**. Assuming that you **[situation written in future tense]** one more time, what is the probability of **[outcome written in infinitive form]** again?". This structure was presented to participants during a training phase (Appendix C). Each situation was combined with its respective outcome (either positive or negative, depending on the condition). For example, the situation "Undergraduate research project" from the pre-experimental study, in the positive generalization conditions, was transformed into: "Imagine you took part in an undergraduate research project and that project was useful to your curriculum. Assuming that you will take part in an undergraduate research project one more time, what is the probability of that

project being useful to your curriculum again?". Responses could vary from 0 to 100%. This task (Appendix D) operationalized our dependent variable in the form of generalizations about the future: the higher the estimate of the outcome happening again in the future, higher the level of generalization. This was based on the generalization task presented by Klar et al. (1997). A total generalization score was computed from the mean of the answers from the twelve questions for each participant.

Certainty about Own Generalization. After each probability estimate, participants would rate how confident they were on their responses, using a scale that varied from 1 (not confident at all) to 4 (completely confident). A total certainty score was computed from the mean of the answers from the twelve questions for each participant.

Manipulation Check. Participants rated how focused they were during the induction task or distractor task on a scale varying from 1 ("Totally unfocused: I divided my attention with many other things besides the task") to 5 ("Totally focused: I dedicated my attention exclusively to the task"). In the control condition, they also informed if they had ever played Flappy Bird before and, if they had, how long it had been since the last time they played it. This measured the effectiveness of the induction and distractor tasks.

Familiarity Check. The situations from the generalization task were presented in this part without any outcomes. Participants rated how familiar they were with each situation on a 5-point scale ranging from "Absolutely uncommon" to "Absolutely common".

Controllability over Outcomes. Participants reported their perception about how much control they had over the outcomes of the situations in general on a scale ranging from 1 ("no control at all") to 5 ("total control").

Internet Connection Check. Participants answered if they had any internet connection troubles during the induction/distractor tasks and the generalization tasks. This served as an exclusion criterion for participants who got distracted due to internet problems.

Depression, Anxiety, and Stress Scale (DASS-21). DASS-21 (Lovibond & Lovibond, 2004) is a 21-item scale composed by three subscales. Each of them has seven items and measures the individual's level of depression, anxiety, or stress. Items responses range from 0 ("Strongly Disagree") to 3 ("Strongly Agree"). The Brazilian version of this instrument was created by Vignola and Tucci (2014). Internal consistency for the depression subscale, which was the only one used in this study, in our sample was good ($\alpha = .88$).

Rosenberg Self-Esteem Scale (RSES). RSES (Rosenberg, 1989) was validated in Brazil by Hutz and Zanon (2011). This instrument unidimensionally measures the respondent's self-esteem. It is composed by ten items that vary according to a 4-point scale: "I completely agree", "I agree", "I disagree" and "I completely disagree". Internal consistency for this scale in our sample was good ($\alpha = .88$).

Clinical History Questionnaire. Participants answered if had ever been diagnosed with any mental disorders and if they made use of any psychiatric medication.

Sociodemographics Questionnaire. This questionnaire was composed by questions about the respondent's gender, age, graduation course, which university they were from, and for how long they had been in that university. If they had already graduated, they also answered if they were on a Masters or PhD program. If they had already graduated or dropped out, they answered when their last semester was in the university.

Procedure

Participants were recruited through social media posts and by a method based on Goodman's (1961) snowball sampling protocol, in which they were asked to invite more acquaintances to volunteer in the research. The researcher scheduled a time and day for them to participate in a videocall via Google Meet with him. During the videocall, the researcher sent a link to one of six Google Forms, each corresponding to one condition of the experiment, which was randomly defined. After giving informed consent, volunteers engaged in the induction task if they were on the experimental conditions or in the distractor task if they were in the control conditions. This step lasted for seven minutes, and the researcher would let them know when to start, when half of the time (i.e., three and a half minutes) had passed, and when the time was up. Then, they responded to each instrument described in the previous section of this article, following the same order as they were mentioned before.

Data Analysis

The version 21 of the software SPSS was used for the analyses. Firstly, Shapiro-Wilk tests were run in order to investigate which variables departed from normality. Then, general linear model analyses were performed to assess if the experimental manipulation was adequate and if participants in distinct conditions were not differently familiar to the situations that were presented to them in the generalization task. After that, analyses of variance were employed with generalization as the dependent variable to test this study's hypotheses. To test our expectations about the moderation effects of depression and self-esteem, two analyses of moderation were used with these variables as moderators, respectively. For exploratory purposes, correlations were run among generalization, controllability over the situations, familiarity to the situations, and certainty about own generalization. Then, the sample was split by valence so we could

check for correlations among depression, self-esteem, and positive and negative generalizations.

Results

Normality Tests

Shapiro-Wilk tests were run to determine whether some variables should be later tested via parametric or non-parametric tests. Generalization did not depart significantly from normality, $W(527) = .996$, $p = .19$, as well as familiarity, $W(524) = .995$, $p = .13$. Variables that departed significantly from normality were depression, $W(527) = .938$, $p < .001$, self-esteem, $W(529) = .984$, $p < .001$, certainty about own generalization. $W(521) = .967$, $p < .001$, controllability over outcomes, $W(531) = .813$, $p < .001$, manipulation check, $W(531) = .752$, $p < .001$, and age, $W(531) = .895$, $p < .001$.

Manipulation Check

It was important for the induction and distractor tasks to be equally effective. A general linear model was used to check for significant group differences. This variable did not differ either by processing mode, $F(2, 525) = 0.72$, $p = .486$, nor by valence, $F(1, 525) = 2.78$, $p = .096$. However, there was a significant interaction between valence and processing mode on the manipulation check, $F(2, 525) = 3.20$, $p = .041$, $\omega^2 = .004$. Since this was a considerably small effect, it might be due to the sample size and consequent statistical power of the test. Simple effects analysis revealed that participants from the positive condition perceived themselves to be significantly more focused on the abstract processing mode induction than participants from the negative condition, $p = .006$. This did not happen in the concrete condition, $p = .408$, and in the control condition, $p = .331$. It was also necessary to check if there would be manipulation check differences within the control condition between people who were

experienced with Flappy Bird and people who were not. A Mann-Whitney U test indicated a non-significant difference between those two groups, $U = 2{,}763$, $p = .745$.

Familiarity Check

It was also important for participants to be equally familiar to the situations that were presented to them. The situations were taken from the pre-experimental study, which was conducted among undergraduate students from University of Brasília. Therefore, it would not be ideal if participants differed in this variable by university or by academic degree. To test this, a 2 x 2 between-subjects ANOVA was performed, with one factor being university (from University of Brasília, not from University of Brasília) and the other being academic degree (undergraduate student, not undergraduate student). No significant differences were found by university, $F(1, 520) = .253$, $p = .651$, and by academic degree $F(1, 520) = .501$ $p = .479$. No significant interaction between these two factors was found as well, $F(1, 520) = .019$, $p = .892$.

Effect of Processing Mode and Valence on Generalization

Levene's test did not indicate significantly unequal variances of generalization across the six conditions (i.e., Abstract x Positive, Abstract x Negative, Concrete x Positive, Concrete x Negative, Control x Positive, and Control x Negative) in this study, $F(5, 521) = 1.17$, $p = .32$. Therefore, no corrections were necessary. A 2 x 3 between-subjects ANOVA was performed to test the effects of valence (positive, negative) and processing mode (abstract, control, concrete) on generalization. This made it possible to test this study's hypotheses.

Our first main effect hypothesis was that participants would generalize more in the abstract condition than in the concrete and control conditions, whilst these last two would not significantly differ from each other. There was no significant main effect of

processing mode on generalization, $F(2, 521) = .737$, $p = .479$, so this hypothesis was not confirmed. The second main effect hypothesis was that participants would make more positive than negative generalizations. A significant main effect of valence on generalization was identified, as participants made significantly stronger positive ($M = 69.45$, $SD = 10.84$) than negative generalizations ($M = 59.47$, $SD = 11.3$), $F(1, 521) = 107.687$, $p < .001$, $\omega^2 = .17$, so the second hypothesis was confirmed. This can be considered a large effect (Kirk, 1996).

Our interaction effect hypothesis was that processing mode would produce no effect on negative generalization, whilst abstract processing mode would lead individuals to make stronger positive generalizations than the control and concrete conditions, which would have no effect when compared to each other. A significant interaction between valence and processing mode on generalization was found, $F(2, 521) = 547.734$, $p = .011$, $\omega^2 = .01$. This effect, which can be considered small (Kirk, 1996), indicates that generalizations in the three processing mode conditions were affected differently by valence.

Simple effects analysis revealed that, when it came to negative generalization, processing mode had no significant effect on it, $F(2, 521) = 1.692$, $p = .185$, which partially confirmed the third hypothesis. It was also revealed that processing mode in fact had an effect on positive generalization, $F(2, 521) = 3.62$, $p = .028$, but not in line with what had been hypothesized. A multiple comparisons analysis revealed that positive generalization in the concrete condition ($M = 66.95$, $SD = 10.79$) was marginally significantly lower than in the control condition ($M = 70.17$, $SD = 11.13$, $p = .053$), and significantly lower than in the abstract condition ($M = 71.2$, $SD = 10.24$, $p = .01$). The abstract and control conditions did not significantly differ in positive generalization ($p = .532$). These results did not fully confirm this study's third

hypothesis. They indicate that a more concrete thinking style decreases positive generalization, rather than abstract processing increases it.

Moderation of Depression on the Effect of Processing Mode on Negative Generalization

We expected that the difference in negative generalizations between abstract and the other two processing mode conditions would get larger as depression levels rose. To test that, a moderation analysis was run. An indicator dummy coding was used for processing mode with the abstract group as reference. Therefore, the two dummy variables created represented the comparison between the abstract versus the concrete level and the comparison between the abstract and control level. Depression was divided in three parts by the 16th, 50th, and 84th percentiles (Hayes, 2022), so its moderation effect could be more adequately assessed. As it can be seen on Table 4, no significant moderation effect was found at any level of depression for both comparisons (i.e., abstract versus concrete and abstract versus control), so our expectations were not confirmed.

Table 4

Effects of Depression's Moderation Model

	Coefficient (b)	***SE***	***t***	***p***	***LLCI***	***ULCI***
Constant	56.06	2.15	26.10	<.001	51.83	60.30
Abstract versus Concrete (X_1)	.06	3.07	.02	.985	-5.98	6.09
Abstract versus Control (X_2)	-.13	3.03	-.04	.966	-6.09	5.83
Depression (W)	.24	.13	1.84	.067	-.02	.50
Moderation 1 (X_1*W)	.09	.18	.50	.617	-.26	.44
Moderation 2 (X_2*W)	-.11	.17	-.66	.508	-.45	.22

Note. SE = standard-error; *LLCI* = lower level of confidence interval; *ULCI* = upper level of confidence interval.

Moderation of Self-esteem on the Effect of Processing Mode on Positive Generalization

Another moderation analysis was performed to test this study's assumption about self-esteem. It was expected that self-esteem would moderate the effect of processing mode on positive generalization in the same way depression was expected to moderate processing mode's effect on negative generalization. Processing mode was also dummy coded with the abstract level as reference, so the dummy variables represented the same comparisons from the previous analysis. Self-esteem was the moderator variable, also divided by the 16th, 50th, and 84th percentiles (Hayes, 2022). Table 5 shows that no significant moderation effect was found at any level of self-esteem for any of the comparisons (i.e., abstract versus concrete and abstract versus control). Thus, our prediction was not confirmed.

Table 5
Effects of Self-Esteem's Moderation Model

	Coefficient (b)	***SE***	***t***	***p***	***LLCI***	***ULCI***
Constant	71.17	1.11	64.10	<.001	68.98	73.36
Abstract versus Concrete (X_1)	-4.17	1.58	-2.63	.009	-7.29	-1.05
Abstract versus Control (X_2)	-.96	1.58	-.60	.546	-4.08	2.16
Self-esteem (W)	.33	.20	1.68	.094	-.06	.73
Moderation 1 (X_1*W)	.16	.28	.58	.561	-.39	.72
Moderation 2 (X_2*W)	.12	.28	.44	.659	-.42	.67

Note. SE = standard-error; *LLCI* = lower level of confidence interval; *ULCI* = upper level of confidence interval.

Generalization, Controllability, Familiarity, and Certainty

Pearson correlations were performed to explore associations among generalization, controllability over the situations, familiarity to the situations, and certainty about own generalization. The only significant relationships were between certainty and all the other variables. Detailed results are displayed on Table 6.

Table 6
Pearson Correlations among Generalization, Controllability, Familiarity, and Certainty

	1	2	3	4
1. Generalization	-			
2. Controllability	.003	-		
3. Familiarity	.023	.005	-	
4. Certainty	.181*	.135*	.204*	-

* The correlation is significant at the .01 level (2-tailed).

Associations among Positive and Negative Generalization, Depression, and Self-esteem

Even though significant moderation effects of depression and self-esteem were not found, it was still necessary to investigate if these variables were associated to generalization. The sample was split by valence so positive and negative generalizations could be isolated and the relationships could be more clearly understood. Pearson correlations confirmed the existence of significant associations between negative generalization and depression, and between positive generalization and self-esteem. Complete results are shown in Table 7.

Table 7
Pearson Correlations among Generalization, Depression, and Self-Esteem, split by Valence

	1	2	3
1. Positive generalization	-		
2. Depression	-.266*	-	
3. Self-esteem	.228*	-.678*	-
1. Negative generalization	-		
2. Depression	.194*	-	
3. Self-esteem	-.244*	-.681*	-

* The correlation is significant at the .01 level (2-tailed).

Discussion

This experiment was able to identify whether abstract or concrete processing mode impacts positive generalization, which better clarifies the relationship between processing mode and generalization. It was also possible to properly check the roles of depression and self-esteem in the model. Though it has been suggested that abstract

processing leads to generalization (Van Lier et al., 2014; Van Lier, Moulds et al., 2015; Van Lier & Raes, 2018; Van Lier, Vervliet et al., 2015), the creation of a control condition generated results which suggest that concrete processing leads to a decrease in positive generalization. Nevertheless, most of our results are still in line with what has been found in the field so far.

Van Lier et al. (2014) found no significant main effect of processing mode on negative generalization. This was replicated in this study. When looking solely at negative generalization, no significant effect of processing mode was found. By using a median split in depression, Van Lier et al. (2014) found that abstract thinking led to significantly higher negative generalization than concrete thinking among more depressed participants. The issues with this statistical procedure have already been discussed and we therefore used a different approach.

We found no significant moderation effect of depression on the relationship between processing mode and negative generalization, differently than what was proposed by the authors. However, depression and negative generalization were positively correlated. This hints some sort of relationship between these two variables. This finding is consistent with the vast literature (Carver & Ganellen, 1983; Carver et al., 1985; Ganellen, 1988; Klar et al., 1997; Thew et al., 2017; Van den Heuvel et al., 2012; Yang & Liu, 2022), but the nature of this relationship requires further examination. It could be possible that no moderation was found because this study was conducted on a non-clinical sample. Studies involving and comparing both clinical and community samples are recommended to solve this ambiguity.

Sport participants have made higher positive generalizations when thinking abstractly than when thinking concretely (Van Lier, Moulds et al., 2015). These results were replicated among undergraduate students in this study. Additionally, we were able

to determine that the processing mode that impacts positive generalization is the concrete one – at least for this study's sample. It has been posited that self-esteem moderates this effect (Van Lier, Moulds et al., 2015). Our moderation analysis did not confirm this statement, but a positive correlation between self-esteem and positive generalization was found.

One could argue that the stimuli from our control condition differed from the stimuli in the experimental conditions. This is a valid claim, since the abstract and concrete conditions consisted of questions that focused on abstract or concrete aspects of a situation, whilst the control condition consisted of a game to distract participants from thinking about that same situation. This was an intentional choice to prevent participants from engaging in either processing mode, but it comes with a few limitations.

The questions from the experimental conditions and the game are stimuli of different natures. This might mean that the game could generate uncontrolled cognitive load, which could in turn impact generalization. This would make the comparability between experimental and control conditions less direct. An alternative to our method would be to create a control condition in which participants answer questions about the situation that are neither focus on its abstract nor concrete aspects, but rather on neutral aspects. This approach might not distract participants from engaging in either processing mode as well as the game from our condition, but it solves the comparability issue. A future study is needed so these two types of control conditions can be contrasted.

Interestingly, negative generalization was negatively correlated to self-esteem whilst positive generalization was negatively correlated to depression. At the same time, depression and self-esteem were negatively correlated. Besides the relationship between

negative generalization and depression, our correlation results reinforce the idea that these two variables, along with positive generalization and self-esteem, are interconnected. These findings are in line with both classic and more recent studies (Battle, 1978; Beck, 1976; Brown & Dutton, 1995; Chai et al., 2019; Kernis et al., 1989; Negovan & Bagana, 2011; Roberts & Monroe, 1994). Therefore, there is enough evidence supporting the existence of a relationship between these variables. It just might not be a moderation relationship.

Instead, a conjunction of more recent studies might hint that self-esteem is a negative predictor of depression (Chai et al., 2019; Rossi et al., 2020), whereas negative generalization is a positive predictor of depression (Naci & Koletsi, 2021; Ren et al., 2022). It must be noted that Ren et al. (2022)'s study was conducted on mice. Obviously, generalization was not operationalized in that study in the same way as in this study. The authors employed a stress-induced generalization of negative memories paradigm. Therefore, before generalizing this assumption for humans, more studies should be conducted on human samples and using the proper paradigms and operational definitions for generalization.

All due limitations considered, we raise some hypotheses from these findings and ours. Both low self-esteem and negative generalization might be causes of depression. We also propose that positive and negative generalization might be two sides of the same coin, meaning that the more positively people generalize, the less likely they are to make higher negative generalizations, and vice-versa. This model could explain not only our results but also why Van Lier, Moulds et al. (2015) uncovered self-esteem as a predictor of positive generalization. This explanation is partially backed by our study: divergently than what was proposed by them, no

moderation effect of self-esteem was found. To further test this model, some research propositions are presented.

A study design that divided self-esteem by low and high, created two experimental conditions, and evaluated participants' depressive symptoms could be useful. Not by a median-split procedure, but by properly assessing individuals' levels of self-esteem and picking the lowest and highest scored ones in a previous phase of the study. In another study, the same could be done with the tendency to negatively generalize. Experimental conditions of low and high on negative generalization could be created to test differences in depression among volunteers. Psychometric studies would be useful to test if negative and positive generalizations are two sides of the same coin. Such studies should use proper and direct measures of generalization, in line with what has been proposed by Klar et al. (1997).

The largest effect found in this study was the impact of valence on generalization. Participants predicted that outcomes were approximately 10% more likely to repeat themselves given the same situation if they were positive than if they were negative. Despite of this effect's consistency with the literature (Van Lier & Raes, 2018), no study theorized on why that might be.

Depressed individuals tend to make more negative generalizations than non-depressed ones (Klar et al., 1997; Thew et al., 2017; Van den Heuvel et al., 2012; Yang & Liu, 2022). Since our sample was non-clinical, one could expect that volunteers would generalize more positively than negatively. This is also true for the other study in the field that compared generalization by valence, which was conducted on athletes (Van Lier & Raes, 2018).

This finding has one limitation, however. Contrasting outcomes for some situations used in the generalization task may have differentially influenced

participants' judgements. For instance, the situation "Going to a party" had "having fun" as its outcome for the positive conditions, whilst it had "dangerous environment" for the negative conditions. Such divergent outcomes could be differently perceived in terms of how likely they were to happen again. Nevertheless, one cannot be sure that these differences would systematically and specifically make positive outcomes more likely than negative ones under the respondents' perception.

It was important for participants to pay full attention to the processing mode, distractor, and generalization tasks. It was assumed that this would make the processing mode manipulation more effective. Some precautions were taken in order to increase participants' attention during the experiment, such as only allowing them to take part in the videocall via computer to avoid smartphone notifications. Respondents that got interrupted or distracted during the aforementioned tasks were excluded from the sample and the videocall allowed the experiment to mind any other atypical activities for the duration of the experiment. It is important to note, however, that this data collection procedure differs from all other studies, which were conducted in person (Van Lier et al., 2014; Van Lier, Moulds et al., 2015; Van Lier & Raes, 2018; Van Lier, Vervliet et al., 2015). It should be inspected if results would still be similar if collected in this fashion as well.

Final Considerations

This study made it possible to better assess the effect of concrete processing on positive generalization. This means that thinking about more perceptual and contextual aspects of a situation can lead people to make more realistic inferences about reality, or at least be less prone to creating overly high expectations and feeling frustrated afterwards. These findings also have important theoretical implications, since it has

been believed that abstract thinking is what leads to generalization (Van Lier et al., 2014; Van Lier, Moulds et al., 2015; Van Lier & Raes, 2018; Van Lier, Vervliet et al., 2015). Results about the relationship among generalization, self-esteem, and depression also allowed us to propose a new model to explain it, which is in need of further empirical validation.

The type of generalization that participants were asked to make in the experiment was generalizations about the future. They were informed that a situation and an outcome had happened and then were asked to estimate how likely such outcome would be to follow that same situation again in the future. More types of generalization have been investigated in other studies, such as the generalization process involved in overgeneral autobiographical memories (Gadeikis et al., 2017; Philippot et al., 2003; Raes et al., 2008; Williams et al., 2007), generalization of anger of others toward the self (Van Lier, Vervliet et al., 2015), and generalization about the self (Van Lier & Raes, 2018; Van Lier, Moulds et al., 2015) – to name a few. All these should be investigated under the manipulation of processing mode with control condition and checking for moderation effects. This would further broaden our findings.

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Appendix A

Approval by the Research Ethics Committee (Pre-Experimental Study and Experiment)

UNB - INSTITUTO DE CIÊNCIAS HUMANAS E SOCIAIS DA UNIVERSIDADE

Plataforma Brasil

PARECER CONSUBSTANCIADO DO CEP

DADOS DO PROJETO DE PESQUISA

Título da Pesquisa: Processamento abstrato versus concreto - A relação entre modo de processamento, valência, depressão, autoestima e generalização

Pesquisador: Tiago Cunha de Oliveira

Área Temática:

Versão: 2

CAAE: 25317519.9.0000.5540

Instituição Proponente: Instituto de Ciências Humanas/UNB

Patrocinador Principal: Financiamento Próprio

DADOS DO PARECER

Número do Parecer: 3.854.993

Apresentação do Projeto:

Inalterado em relação ao parecer consubstanciado emitido pelo CEP/CHS no dia 21 de novembro de 2019

Objetivo da Pesquisa:

Inalterado em relação ao parecer consubstanciado emitido pelo CEP/CHS no dia 21 de novembro de 2019

Avaliação dos Riscos e Benefícios:

Inalterado em relação ao parecer consubstanciado emitido pelo CEP/CHS no dia 21 de novembro de 2019.
Apresentou inclusões de justificativa pelo uso da expressão "baixíssimo riscos"

Comentários e Considerações sobre a Pesquisa:

Inalterado em relação ao parecer consubstanciado emitido pelo CEP/CHS no dia 21 de novembro de 2019

Considerações sobre os Termos de apresentação obrigatória:

Inalterado em relação ao parecer consubstanciado emitido pelo CEP/CHS no dia 21 de novembro de 2019
Apresentou inclusões nos TCLE dos estudos sobre as atividades que serão realizadas e o tempo de duração em cada etapa

(Appendix A continues)

Appendix A continuation

Recomendações:

Inalterado em relação ao parecer consubstanciado emitido pelo CEP/CHS no dia 21 de novembro de 2019

Conclusões ou Pendências e Lista de Inadequações:

A pesquisa intitulada "Processamento abstrato versus concreto - A relação entre modo de processamento, valência, depressão, autoestima e generalização", do pesquisador responsável Tiago Cunha de Oliveira, foi aprovada por este comitê de ética em pesquisa em sua reunião ordinária do dia 22 de novembro de 2019. A emenda ao projeto atendeu as pendências levantadas nesta reunião, pois o pesquisador apresentou retorno das mesmas, como:

(1)detalhado no método sobre os grupos da amostra e sua seleção, além da participação destes nas etapas do estudo e os cenários;

(2) justificado quanto a descrição sobre os riscos e benefícios da pesquisa para os participantes; adequado as atividades especificas de cada estudo no TCLE;

(3) Anexado novos arquivos de TCLE, por estudo.

A metodologia, bem como todos os instrumentos já aprovados por este comitê permanecerão os mesmos, a exceção dos TCLE que serão aprovados no novo formato.

O CEP/CHS faz contar deste novo parecer tais informações como forma de resguardar a referida pesquisa quanto aos seus aspectos éticos.

Considerações Finais a critério do CEP:

Este parecer foi elaborado baseado nos documentos abaixo relacionados:

Tipo Documento	Arquivo	Postagem	Autor	Situação
Informações Básicas do Projeto	PB_INFORMAÇÕES_BÁSICAS_DO_PROJETO_1466764.pdf	29/11/2019 21:16:15		Aceito
Outros	carta_resposta_de_pendencias.pdf	29/11/2019 21:14:12	Tiago Cunha de Oliveira	Aceito
Projeto Detalhado / Brochura Investigador	projeto_detalhado_atualizado.pdf	29/11/2019 21:13:48	Tiago Cunha de Oliveira	Aceito
Cronograma	cronograma.pdf	29/11/2019 21:13:30	Tiago Cunha de Oliveira	Aceito
TCLE / Termos de Assentimento / Justificativa de	TCLE2_atualizado.pdf	29/11/2019 21:12:36	Tiago Cunha de Oliveira	Aceito

(Appendix A continues)

Appendix A (continuation)

Ausência	TCLE2_atualizado.pdf	29/11/2019 21:12:36	Tiago Cunha de Oliveira	Aceito
TCLE / Termos de Assentimento / Justificativa de Ausência	TCLE1_atualizado.pdf	29/11/2019 21:12:27	Tiago Cunha de Oliveira	Aceito
Outros	aceite_institucional.pdf	07/11/2019 21:18:37	Tiago Cunha de Oliveira	Aceito
Outros	carta_de_encaminhamento.pdf	07/11/2019 21:17:49	Tiago Cunha de Oliveira	Aceito
Outros	carta_revisao_etica.pdf	07/11/2019 21:17:27	Tiago Cunha de Oliveira	Aceito
Outros	DASS21.pdf	07/11/2019 21:16:31	Tiago Cunha de Oliveira	Aceito
Outros	Instrucoes_para_tarefa_do_Estudo_1.pdf	07/11/2019 21:16:07	Tiago Cunha de Oliveira	Aceito
Outros	Justificativa_para_nao_apresentacao_tarefas_de_inducao_e_generalizacao.pdf	07/11/2019 21:15:52	Tiago Cunha de Oliveira	Aceito
Outros	RSES.pdf	07/11/2019 21:12:17	Tiago Cunha de Oliveira	Aceito
Outros	questionario_sociodemografico_do_estudo_1.pdf	07/11/2019 21:11:16	Tiago Cunha de Oliveira	Aceito
Outros	questionario_de_historico_clinico_e_dados_sociodemograficos_do_estudo_2.pdf	07/11/2019 21:10:13	Tiago Cunha de Oliveira	Aceito
Outros	lattes_goiara.pdf	07/11/2019 21:07:39	Tiago Cunha de Oliveira	Aceito
Outros	lattes_tiago.pdf	07/11/2019 21:07:16	Tiago Cunha de Oliveira	Aceito
Folha de Rosto	folha_de_rosto.pdf	07/11/2019 21:05:05	Tiago Cunha de Oliveira	Aceito

Situação do Parecer:
Aprovado

Necessita Apreciação da CONEP:
Não

BRASILIA, 23 de Fevereiro de 2020

Assinado por:
Luciana Stoimenoff Brito
(Coordenador(a))

Appendix B

Survey of Typical University Situations (Pre-Experimental Study)

Por favor, leia com atenção as seguintes instruções.
Aponte 7 situações que incluam os seguintes elementos: verbo e objeto. Por exemplo, ‘realizar uma atividade complementar’. Após sugerir cada situação, você deverá apontar uma possível consequência ou resultado positivo e outro negativo delas. Por exemplo, uma consequência positiva seria: ‘a atividade complementar foi integralizada no meu histórico’; a consequência negativa poderia ser ‘a atividade complementar foi indeferida’. Outro exemplo de situação que pode ser apontada: 'comparecer a uma festa do meu curso'. Exemplos de consequências positivas para ela poderiam ser 'me divirto com meus amigos' ou 'interajo com uma pessoa por quem tenho interesse'; exemplos de consequências negativas poderiam ser 'um(a) amigo(a) passa mal no início do evento e cabe somente a mim cuidar dele(a) pelo resto da festa' ou 'piso em falso enquanto estou dançando e me machuco'.
Ao apontar os exemplos, tente considerar tanto situações acadêmicas quanto situações sociais, desde que elas estejam relacionadas ao contexto universitário.
Em uma escala de 1 a 5, você deverá sinalizar o quão agradável (no caso da consequência positiva) ou desagradável (no caso da consequência negativa) é cada consequência para você.
Você deverá pensar nas situações mais comuns ou frequentes dentro da sua experiência como estudante universitário(a).

Situação 1:
Consequência positiva para a situação 1:
Quão agradável é esta consequência em uma escala de 1 a 5?
nada agradável ( ) ( ) ( ) ( ) ( ) extremamente agradável
Consequência negativa para a situação 1:
Quão desagradável é esta consequência em uma escala de 1 a 5?
nada desagradável ( ) ( ) ( ) ( ) ( ) extremamente desagradável

Situação 2:
Consequência positiva para a situação 2:
Quão agradável é esta consequência em uma escala de 1 a 5?
nada agradável ( ) ( ) ( ) ( ) ( ) extremamente agradável
Consequência negativa para a situação 2:
Quão desagradável é esta consequência em uma escala de 1 a 5?
nada desagradável ( ) ( ) ( ) ( ) ( ) extremamente desagradável

Situação 3:
Consequência positiva para a situação 3:
Quão agradável é esta consequência em uma escala de 1 a 5?
nada agradável ( ) ( ) ( ) ( ) ( ) extremamente agradável
Consequência negativa para a situação 3:
Quão desagradável é esta consequência em uma escala de 1 a 5?
nada desagradável ( ) ( ) ( ) ( ) ( ) extremamente desagradável

Situação 4:
Consequência positiva para a situação 4:

Quão agradável é esta consequência em uma escala de 1 a 5?
nada agradável ( ) ( ) ( ) ( ) ( ) extremamente agradável
Consequência negativa para a situação 4:
Quão desagradável é esta consequência em uma escala de 1 a 5?
nada desagradável ( ) ( ) ( ) ( ) ( ) extremamente desagradável

Situação 5:
Consequência positiva para a situação 5:
Quão agradável é esta consequência em uma escala de 1 a 5?
nada agradável ( ) ( ) ( ) ( ) ( ) extremamente agradável
Consequência negativa para a situação 5:
Quão desagradável é esta consequência em uma escala de 1 a 5?
nada desagradável ( ) ( ) ( ) ( ) ( ) extremamente desagradável

Situação 6:
Consequência positiva para a situação 6:
Quão agradável é esta consequência em uma escala de 1 a 5?
nada agradável ( ) ( ) ( ) ( ) ( ) extremamente agradável
Consequência negativa para a situação 6:
Quão desagradável é esta consequência em uma escala de 1 a 5?
nada desagradável ( ) ( ) ( ) ( ) ( ) extremamente desagradável

Situação 7:
Consequência positiva para a situação 7:
Quão agradável é esta consequência em uma escala de 1 a 5?
nada agradável ( ) ( ) ( ) ( ) ( ) extremamente agradável
Consequência negativa para a situação 7:
Quão desagradável é esta consequência em uma escala de 1 a 5?
nada desagradável ( ) ( ) ( ) ( ) ( ) extremamente desagradável

Appendix C

Generalization Task Training Instructions (Experiment)

Agora, serão apresentadas algumas **situações** comuns para a vida universitária, cada uma acompanhada de um possível **resultado**. Sua tarefa será **imaginar que a situação e o respectivo resultado aconteceram com você**. Em seguida, você deverá **pressupor que a mesma situação acontecerá com você novamente no futuro** e **estimar a probabilidade (de 0 a 100%) de o mesmo resultado acontecer**. Pode ser que algumas situações não sejam tão familiares para você em comparação a outras. Mesmo nesses casos, pedimos que você não deixe isso influenciar a sua estimativa de probabilidade do resultado. Lembre-se que você deve pressupor, com certeza, que a situação se repetirá no futuro. **O que gostaríamos de saber é, dada a repetição da situação:**

Qual a probabilidade de o mesmo resultado se repetir.

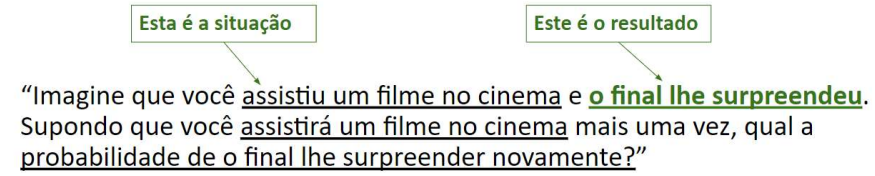
A seguir, apresentamos um exemplo não necessariamente relacionado à vida universitária para ficar mais claro e para você treinar:

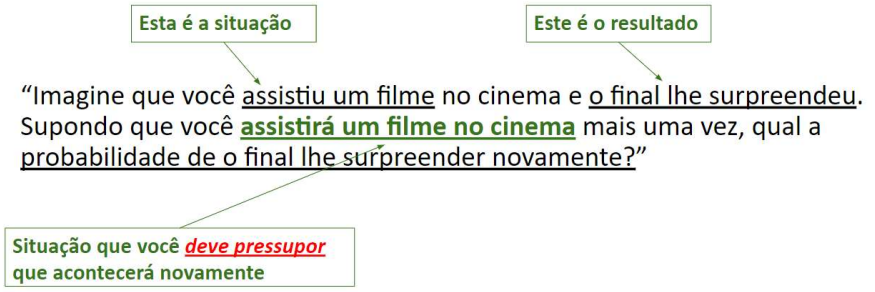
"Imagine que você assistiu um filme no cinema e o final lhe surpreendeu. Supondo que você assistirá um filme no cinema mais uma vez, qual a probabilidade de o final lhe surpreender novamente?"

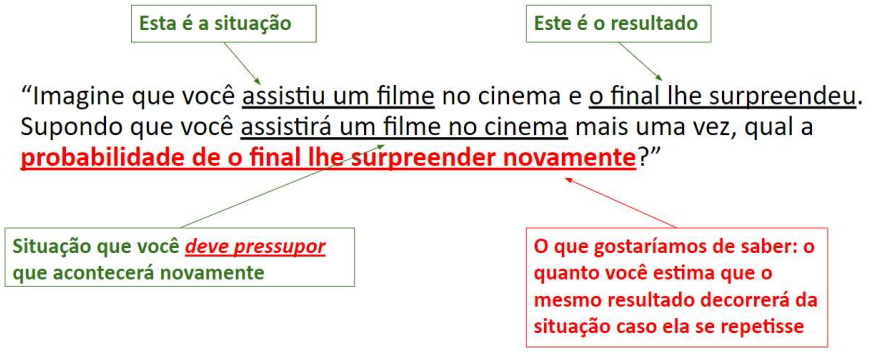
"Imagine que você **assistiu um filme no cinema** e o final lhe surpreendeu. Supondo que você assistirá um filme no cinema mais uma vez, qual a probabilidade de o final lhe surpreender novamente?"

(Appendix C continues)

Appendix C (continuation)







(Appendix C continues)

Appendix C (continuation)

Pode ser que você pense: “devido à pandemia, não posso ir ao cinema, logo a probabilidade é 0” ou “não gosto de ir/nunca vou ao cinema, então a probabilidade é 0”. Este não é o raciocínio que buscamos. Gostaríamos que você assumisse com certeza que a situação se repetirá e, em seguida, dissesse ***qual a probabilidade (de 0 a 100%) de o mesmo resultado ocorrer:*** Qual a probabilidade de você se surpreender com o final de outro filme em uma próxima vez que você fosse ao cinema?

Para cada estimativa de probabilidade que você fizer, você deverá informar em seguida o quão confiante em sua resposta você está, em uma escala que vai de “Nada confiante” a “Totalmente confiante”.

Na próxima página, vamos fazer um breve treinamento considerando o exemplo acima.

Imagine que você assistiu um filme no cinema e o final lhe surpreendeu. Supondo que você assistirá um filme no cinema mais uma vez, qual a probabilidade de o final lhe surpreender novamente?

Quão confiante você está em sua resposta acima?

Nada confiante () () () () Totalmente confiante

Fim do treinamento. Caso tenha alguma dúvida, pergunte ao(à) pesquisador(a). A seguir, você fará a mesma tarefa, porém com situações relacionadas ao cotidiano universitário.

Appendix D
Generalization Task (Experiment)

Positive Condition:

1) Imagine que você foi a uma festa e se divertiu. Supondo que você irá a uma festa mais uma vez, qual a probabilidade de se divertir novamente?
2) Imagine que você fez um trabalho em grupo e experimentou bons momentos de socialização com colegas durante o processo. Supondo que você fará um trabalho em grupo mais uma vez, qual a probabilidade de experimentar bons momentos de socialização com colegas durante o processo novamente?
3) Imagine que você almoçou no Restaurante Universitário e teve um momento de socialização de qualidade com seus amigos. Supondo que você almoçará no Restaurante Universitário mais uma vez, qual a probabilidade de ter um momento de socialização de qualidade com seus amigos novamente?
4) Imagine que você utilizou transporte público para a universidade e se sentiu seguro(a). Supondo que você utilizará transporte público para a universidade mais uma vez, qual a probabilidade de se sentir seguro(a) novamente?
5) Imagine que você participou de um projeto de iniciação científica e esse projeto somou ao seu currículo de maneira conveniente ou proveitosa. Supondo que você participará de um projeto de iniciação científica mais uma vez, qual a probabilidade de esse projeto somar ao seu currículo de maneira conveniente ou proveitosa novamente?
6) Imagine que você fez uma disciplina no verão e conseguiu descansar suficientemente para o semestre regular apesar das obrigações acadêmicas. Supondo que você fará uma disciplina no verão mais uma vez, qual a probabilidade de conseguir descansar suficientemente para o semestre regular apesar das obrigações acadêmicas novamente?
7) Imagine que você fez uma disciplina de uma área que não faz parte de seu curso e adquiriu conhecimento sobre algo que lhe é útil. Supondo que você fará uma disciplina de uma área que não faz parte de seu curso mais uma vez, qual a probabilidade de adquirir conhecimento sobre algo que lhe é útil novamente?
8) Imagine que você fez parte de um time esportivo e conseguiu manter um bom rendimento acadêmico. Supondo que você fará parte de um time esportivo mais uma vez, qual a probabilidade de conseguir manter um bom rendimento acadêmico novamente?
9) Imagine que você estudou na biblioteca da universidade e teve um desempenho satisfatoriamente produtivo. Supondo que você estudará na biblioteca da universidade mais uma vez, qual a probabilidade de ter um desempenho satisfatoriamente produtivo novamente?
10) Imagine que você passou um tempo no Centro Acadêmico de seu curso e teve um momento agradável de socialização com seus colegas. Supondo que você passará um tempo no Centro Acadêmico de seu curso mais uma vez, qual a probabilidade de ter um momento agradável de socialização com seus colegas novamente?
11) Imagine que você fez parte de um estágio e a experiência lhe tornou mais preparado(a) para a profissão que você vai exercer quando se formar. Supondo que você fará parte de um estágio mais uma vez, qual a probabilidade de a experiência lhe tornar mais preparado(a) para a profissão que você vai exercer quando se formar novamente?

12) Imagine que você se sobrecarregou com disciplinas e outros compromissos acadêmicos e passou por isso com a saúde mental intacta. Supondo que você se sobrecarregará com disciplinas e outros compromissos acadêmicos mais uma vez, qual a probabilidade de passar por isso com a saúde mental intacta novamente?

Negative Condition:

1) Imagine que você foi a uma festa e sentiu que o ambiente era inseguro. Supondo que você irá a uma festa mais uma vez, qual a probabilidade de sentir que o ambiente é inseguro novamente?
2) Imagine que você fez um trabalho em grupo e a má participação de um integrante prejudicou o produto final do trabalho. Supondo que você fará um trabalho em grupo mais uma vez, qual a probabilidade de a má participação de um integrante prejudicar o produto final do trabalho novamente?
3) Imagine que você almoçou no Restaurante Universitário e a comida era de baixa qualidade. Supondo que você almoçará no Restaurante Universitário mais uma vez, qual a probabilidade de a comida ser de baixa qualidade novamente?
4) Imagine que você utilizou transporte público para a universidade e se atrasou. Supondo que você utilizará transporte público para a universidade mais uma vez, qual a probabilidade de se atrasar novamente?
5) Imagine que você participou de um projeto de iniciação científica e a quantidade de tempo demandado pelas tarefas foi excessivo. Supondo que você participará de um projeto de iniciação científica mais uma vez, qual a probabilidade de a quantidade de tempo demandado pelas tarefas ser excessivo novamente?
6) Imagine que você fez uma disciplina no verão e seu tempo de descanso nas férias para o semestre regular tornou-se insuficiente. Supondo que você fará uma disciplina no verão mais uma vez, qual a probabilidade de seu tempo de descanso nas férias para o semestre regular tornar-se insuficiente novamente?
7) Imagine que você fez uma disciplina de uma área que não faz parte de seu curso e nada do que você aprendeu lhe foi útil. Supondo que você fará uma disciplina de uma área que não faz parte de seu curso mais uma vez, qual a probabilidade de nada do que você aprender lhe ser útil novamente?
8) Imagine que você fez parte de um time esportivo e seu rendimento acadêmico ficou comprometido. Supondo que você fará parte de um time esportivo mais uma vez, qual a probabilidade de seu rendimento acadêmico ficar comprometido novamente?
9) Imagine que você estudou na biblioteca da universidade e teve uma experiência desconfortável. Supondo que você estudará na biblioteca da universidade mais uma vez, qual a probabilidade de ter uma experiência desconfortável novamente?
10) Imagine que você passou um tempo no Centro Acadêmico de seu curso e perdeu o foco das obrigações que precisa cumprir. Supondo que você passará um tempo no Centro Acadêmico de seu curso mais uma vez, qual a probabilidade de perder o foco das obrigações que precisa cumprir novamente?
11) Imagine que você fez parte de um estágio e fracassou em conciliar o tempo gasto nele com o tempo para outras atividades de seu interesse. Supondo que você fará parte de um estágio mais uma vez, qual a probabilidade de fracassar em conciliar o tempo gasto nele com o tempo para outras atividades de seu interesse novamente?

12) Imagine que você se sobrecarregou com disciplinas e outros compromissos acadêmicos e passou por isso com a saúde mental comprometida. Supondo que você se sobrecarregará com disciplinas e outros compromissos acadêmicos mais uma vez, qual a probabilidade de passar por isso com a saúde mental comprometida novamente?

Note. After each of these questions, participants rated how confident they were with their estimates, exactly as how they practiced in the training phase (Appendix C).