UNIVERSITÉ DE GENÈVE
FACULTÉ DE PSYCHOLOGIE ET DES SCIENCES DE L'ÉDUCATION

SOUMISSION DES PROJETS DE RECHERCHE À LA COMMISSION FACULTAIRE D'ÉTHIQUE

N.B. : Dans ce texte, le masculin est utilisé au sens générique ; il comprend aussi bien les femmes que les hommes.

Depuis la modification, en novembre 2007, de son règlement (titre III du code d'étique de la Faculté), la Commission d'éthique a un mandat décisionnaire et elle est chargée d'examiner tous les projets de recherche, ou projets de campagnes de recherche, élaborés dans la Faculté et impliquant des participants humains. Ne sont pas automatiquement soumis à la Commission les projets qui font l'objet d'une évaluation éthique par une autre instance.

A) Procédure de soumission d'un projet de recherche

1. Remplir le formulaire de soumission qui figure ci-après et l'adresser à la commission facultaire d'éthique (CommissionEthique-FPSE@unige.ch) ; une soumission est possible en tout temps.
2. Le formulaire d'information et de consentement et, le cas échéant, le-s questionnaire-s soumis aux participants doivent être joints à la demande.
3. La demande est examinée par la commission d'éthique, qui peut demander des compléments d'information ; si elle le juge nécessaire, elle consulte un groupe d'experts de l'une des Sections ou de l'Unité des technologies de formation et d'apprentissage (TECFA), y compris sur des aspects scientifiques du projet.
4. Elle donne, ou non, son aval pour la réalisation du projet ; le cas échéant, elle informe les chercheurs des motifs exacts de son refus et se tient à leur disposition pour les aider à une reformulation et à l'éventuelle re-soumission du projet.

B) Projets qui ne sont pas obligatoirement soumis à la Commission d'éthique de la FPSE

1. ***Etudes pilotes***
2. ***Projets de recherche dans les écoles*** : sont examinés par les sous-commissions spécifiques selon procédure habituelle. Si nécessaire, la sous-commission qui examine les projets de recherche dans les écoles peut demander l'avis de la commission d'éthique.
3. ***Projets de recherche dans le milieu médical*** : sont soumis à la commission d'éthique pertinente.
4. ***Projets de thèse*** : doivent comporter un paragraphe évoquant les dispositions prises relatives aux questions éthiques ; l'acceptation du projet par le Collège des docteurs porte également sur les aspects éthiques ; si nécessaire, le candidat est invité à le soumettre à la commission facultaire d'éthique, selon la procédure qui figure sous A.
5. ***Travaux de recherche effectués dans le cadre des formations de base et approfondie*** : sont réalisés sous la responsabilité du Directeur/de la Commission de mémoire/du Comité de programme/du Comité scientifique. Les responsables des recherches doivent en vérifier les aspects éthiques, et il leur appartient de demander à l'étudiant de soumettre le projet à la commission d'éthique, s'il y a lieu, selon la procédure qui figure sous A.

Important : l'Université de Genève a contracté une assurance globale de responsabilité civile qui couvre les projets de recherche pour autant qu'ils aient été évalués et approuvés par une commission d'éthique. Pour bénéficier de cette assurance, les projets listés sous B) doivent aussi être soumis à la Commission d'éthique.

UNIVERSITÉ DE GENÈVE
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SOUMISSION D'UN PROJET DE RECHERCHE
À LA COMMISSION FACULTAIRE D'ÉTHIQUE

Merci de remplir l'ensemble des rubriques qui suivent[1] :

1. Titre de la recherche

Hedonic pleasure and motivational salience of chocolate odor.

2. Dates prévues pour le début et la fin de la recherche

Start: 1.06.2012. End: 1.09.2013

3. **Financement** *[à mentionner uniquement pour les sources externes au DIP]*

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4. Noms du/des chercheurs responsable/s, fonctions et coordonnées

Eva Pool, Doctorante, CISA, rue des battoirs 7, CH-1205 Genève (022 379 98 09, eva.pool@unige.ch)

Dr. Tobias Brosch, Maître Assistant, FPSE, Bld du Pont d'Arve 40, CH-1205 Genève (022 379 92 23, Tobias.Brosch@unige.ch)

Dr. Sylvain Delplanque, Collaborateur scientifique, CISA, rue des battoirs 7, CH-1205 Genève (022 379 98 26).

Prof. David Sander, Section de Psychologie, FPSE, Bld du Pont d'Arve 40, CH-1205 Genève (022 379 92 12/92 07, David.Sander@unige.ch)

5. Description du projet de recherche *[1800-2000 caractères ; prévoir un premier paragraphe (200 caractères ~) pour le descriptif général à transmettre à l'assurance]*

Reward processing involves multiple components such as motivation to invest effort in order to obtain the reward and hedonic pleasure during the reward consumption (Berridge & Robinson, 2003). The global objective of this project is to better disentangle motivation and hedonic pleasure in humans.

Usually these two components work together: the more a reward is liked, the more an organism invests energy to obtain the reward. Some authors proposed that compulsive behaviours involved in addiction are characterized by a progressive dissociation of these two components (*e.g.* Robinson & Berridge, 1993). This proposition had a large impact not only on the conceptualization of addiction behaviours, but also on the conceptualization of reward processing. Nevertheless, the experimental dissociation between motivational salience and hedonic pleasure relies exclusively on animal studies. To the best of our knowledge, this dissociation has never been demonstrated in human. A possible reason is that all the animal experiments that successfully dissociated the two components of reward used brain manipulations that are not suitable for human experiments. In fact, it is by stimulating or inhibiting tonic dopamine release in nucleus accumbens that animal experiments dissociate motivational salience and hedonic pleasure. Several lines of empirical evidence suggest that a stress manipulation could be a valid alternative of brain manipulation to dissociate motivational salience and hedonic pleasure. First, animal studies showed that stress amplify motivational salience (Pecina et al., 2006). Second, it has been recently demonstrated that situations in which subjects try to cope with a stressor triggers a tonic dopamine release in the nucleus accumbens. In stress situation there is a dopamine release in the brain network that is usually manipulated to increase motivational

[1] Les points 1, 2, 5 et 7 seront utilisés pour annoncer le projet à l'assurance de responsabilité civile contractée par l'Université de Genève et assurer ainsi sa couverture.

salience (Cabib et al., 2012). Third, the increase of a motivational state triggered by stress is a well-known phenomenon in clinical psychology. Clinical observations and clinical experiments highlight an increase of craving under stress conditions (Sinha et al., 2006). Fourth, a reward becomes more relevant in a stressful situation versus a stress free situation, as organisms are more willing to mobilize resources to feel better (Leyton, 2009). Finally, several pieces of evidence suggest that motivational salience increases under stress, while other evidence suggests that under stress the hedonic pleasure during the reward consumption is reduced (Berenbaum et al., 1993).

In this experiment, which is part of the PhD of Eva Pool, we want to investigate whether motivational salience and hedonic pleasure are dissociable in humans through a stress manipulation (see procedure section for method and procedure). We predict that in a stressful situation (a) the relevance of the reward increases and participants invest more effort to obtain a reward, but (b) participants like the reward less than in a stress-free situation.

6. Population ciblée, bassin et modalités de recrutement

For the proposed experiments, we will recruit healthy right-handed adults from 18-36 year olds, from the undergraduate student population in Geneva. Participants will be recruited according to the UPPS, BISBAS, SPSRQ questionnaires and 4 questions about chocolate, in order to select participant with a high personality trait of reward seeking and who like chocolate.

6.a. Mentionner l'éventuelle participation d'étudiants en tant que sujets et, le cas échéant, les conditions de cette participation (volontaire, liée à un cours, créditée, activités alternatives pour les étudiants qui ne participeraient pas à la recherche, etc.)

Students will be recruited through an online site as well as through word of mouth and announcements during courses. For the remuneration students from the course "psychologie des émotions" (B2) who participate in the studies will choose between two different options: i) be paid in Swiss francs (about 15.- francs per hour) or ii) receive course credit (if students taking this course do not want to participate in research for 5 hours during the year, they can alternatively write summary of 3 empirical articles).

7. Nombre de participants

36 participants

8. Objectifs de la recherche

It has been suggested that reward processing involves multiple components such as motivational salience and hedonic pleasure. As mentioned above, these components typically work together: the more the reward is liked, the more the organism is willing to work to obtain the reward. Various authors (*e.g.* Robinson & Berridge, 1993) claimed that this dissociation has an important role in compulsive behaviour involved in several psychopathologies as substance addiction, behavioural addiction or eating disorders. However, to the best of our knowledge, no study ever demonstrated that hedonic pleasure and motivational salience are dissociable in human. Several animal experiments demonstrated that it is possible to dissociate these components by manipulating mesolimbic dopamine level. Here, we want to test if these two components of reward processing are dissociable in human by using a paradigm similar to those that have been used on animal research, but by using a psychological manipulation rather than a brain manipulation. The possible independence of the motivational salience and hedonic pleasure in human reward processing could have important theoretical and clinical implication.

9. Lieu du déroulement de la recherche

The experiments will take place in Brain and Behavior Laboratory (BBL) of the University of Geneva. All rooms fulfil the security requirements that are appropriate for this type of studies.

10. Matériel, à référencer (*les questionnaires doivent être annexés*)

This project involves the following equipment: Pencil and paper, computers, CRT & LCD screens,

mouse, keyboard, hand dynamometer (TSD121C, Biopac®), an olfactometer (manufactured by Firmenich, SA, Geneva, Switzerland), a video camera, and the CERT (Computer Expression Recognition Toolbox)

In this project the following stimuli are used: 1) visual stimuli: three different complex geometrical figures; 2) Odours stimuli (see table 1 for odours characteristics): provided by Firmenich, SA, Geneva, Switzerland.

In this project, the following questionnaires are used: PANAS-state, UPPS, BISBAS, SPSRQ (see attachment) and 4 questions about chocolate (see table 2) are asked.

Different Visual Analogue Scales are used for the evaluation of the odour characteristics (see table 3)

The written consent is different for the control and the experimental group, as participants in the control group will not accomplish the socially evaluated cold pressure task (see attachment)

11. Procédure (récolte des données, information et consignes aux participants)

The procedure consists in a two-day experiment.

During the first day, participants will accomplish a pavlovian instrumental transfer test (Talmi et al., 2008). In the first phase (pavlovian learning) participants will associate a rewarding chocolate odour with a neural image and the absence of the rewarding odour with another neutral image. In the second phase (instrumental learning) they will learn that the energy invested in an instrumental action (press a hand grip) leads to the chocolate odour delivery. In the third phase (transfer test), participants will execute the instrumental action, while they are viewing the neutral images previously associated with the reward or with the absence of the reward. Just after the instrumental learning and before the transfer test, a group of participants will do a stress-inducing task and another group of participants will do a control task. The stress-inducing task will be a validated paradigm known as "socially evaluated cold pressor test" (Schwabe et al., 2008). This recent task has been already used several in the literature (*e.g.* Lass-Hennemann et al., 2010; Schwabe & Wolf 2019; Schwabe et al., 2009; Smeets, 2011, Shultz et al., 2011; Römer et al., 2011; Weymar et al., 2012; Zoladz et al. 2011). In this paradigm participants will be asked to immerse their hand in cold water (0-4 °C) as long as possible. During this period, they will be told that they are videotaped and they will be observed by an unknown person that will code their facial reactions. If after three minutes participants will still keep their hand in the water, they will be instructed to remove it. The maximal length of the task will be of three minutes. Participants in the control group will be asked to put their hand in warm water for three minutes without being observed. To check if the stress induction is successful, salivary alpha amylase, salivary cortisol and mood (PANAS-State) will be measured before and after the stress-task. The saliva cortisol will be measured through a piece of cotton that participants will be asked to chew. Each sample will be made completely anonymous by being identified with a number. The samples will be sent to a laboratory that will extract cortisol and alpha amylase.

We have already used the first phase of the pavlovian instrumental transfer test in a previous study, that demonstrated that the neutral images can be successfully conditioned with chocolate odours (Pool, Delplanque, Brosch & Sander, in preparation).

We expect that during the transfer test, participants in the stressful condition will mobilize more effort (high motivational salience condition) after the perception of the stimulus previously associated with the reward, compared to participants in the stress-free condition (low motivational salience condition).

During the second day, participants will smell different scents. Between these scent there will be the chocolate odour smelled during the first day. They will evaluate on a visual analogue scale the pleasantness (hedonic pleasure measure), the intensity, the edibility, the familiarity the flowery and sweetness of each scent (for the precise questions see table 3). After, one group of participants will accomplish the stress task and another group of participants will accomplish the control task. Participants will be attribute to the stress condition and the control condition as in the first day. Participants in the stressful situation and participants in the stress-free situation will re-evaluate the characteristics of the different scents.

We are expecting that participants in the stressful condition will rate the chocolate odour less pleasant after the stress induction task compare to participants in the stress-free condition.

At the end of the data collection, the goal of the experiment will be communicated to each participant.

11.b. Si la recherche implique des critères d'inclusion/exclusion, mentionner la procédure et le moment où s'effectue cette vérification

The beginning of the academic year, undergraduate students from the course "psychologie des émotions" (B2) will be asked to fill up different online questionnaires. Among them, there will be the BIS-BAS, the UPPS, the SPSRQ and 4 questions about chocolate that will be used for participants selection. Students who report a high score on the reward-seeking trait and who report to like chocolate will be selected. Moreover, participants will be excluded based on these criteria: reported trouble in odour perception, smoke habits, being left-handed, being more than 36 years old or less than 18 years old.

12. Avantages et bénéfices pour les participants

Participants will learn about the current research in emotion psychology. At the end of the data collection all participants will be informed of the goal of the research and if they wish they can also be informed on the results (no individual result will be provided). Moreover they will validate hours for the course, or will receive 30 CHF .

13. Inconvénients et risques éventuels pour les participants

The "socially evaluated cold pressure task" is a commonly used procedure in the literature (Schawbe et al., 2008) that induces a temporary and moderate state of stress. The main disadvantage for the participant is a feeling of discomfort and unease produced by both the immersion of the hand in cold water and the feeling of being observed and evaluated.

14. Dispositif de contrôle des risques et inconvénients

In the "socially evaluated cold pressure task", participants are asked to put their hand in the cold water "as long as they can", they are therefore free to interrupt the uncomfortable stress task at any time. Moreover, even if participants do not interrupt the task, after three minutes they are asked to remove the hand from the cold water.

At the end of the experimental procedure, participants will receive an unexpected reward (chocolate) in order to balance the negative mood induced by the "socially evaluated cold pressure task".

15. Mesures de confidentialité, d'accès aux données

Data will be collected, stored and processed in a complete anonymous way. Each participant is identified with a number. All participants are required to fill in a form requesting their age, gender and some demographical background information. These forms are secured in Prof. Sander's lab and are the only way to identify the data with a personal file. Only the above mentioned investigators of this research will have access to the data.

16. Mesures d'archivage/destruction des données *(N.B. : Les données doivent être gardées au moins 10 ans.)*

The data will be stored in password-protected computers that are only accessible to lab members.

17. Diffusion publique des résultats

The results of these studies will be presented in conferences and published in peer-reviewed scientific journals or book chapters

18. **Consentement et/ou retrait des participants** *(formulaire à annexer[2])*

At the beginning of each experiment, the investigator or other experimenters ask the participants to read the consent form carefully and to ask any questions they may have. If they agree to participate in the experiment, participants are then asked to sign the form.

[2] Le formulaire d'information et de consentement doit être soumis à (et signé par) tous les participants, y compris les étudiants qui participent à la recherche dans le cadre d'un enseignement.

19. Compensations éventuelles

Participants will be compensated for their time by course credit or financially at a rate of about 15 CHF/hour for the behavioural and training parts of the experiment.

20. Date de la soumission

06.06.2012