

PERSONNALITÉ ET CHANGEMENT DE COMPORTEMENT

APPLICATION AU COACHING PERSONNALISÉ INFORMATISÉ POUR PERSONNES DIABÉTIQUES

Morghane Aubert

Directeur de thèse : Jean-Claude Martin

Encadrante : Céline Clavel

Groupe CPU : Cognition, Perception et Usages

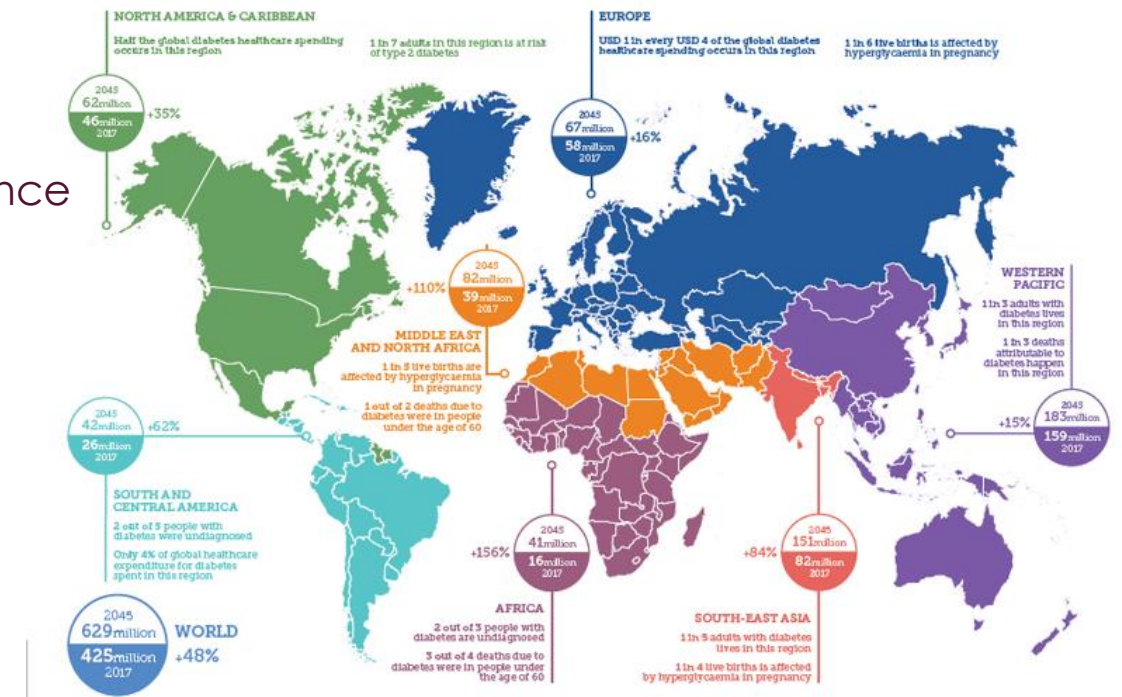
Ecole doctorale : Sciences du sport, de la motricité et du mouvement humain

Thèse en partenariat avec l'entreprise ValoTec



TYPE 2 DIABETES

- Diabetes : metabolic disorders which often imply a high and abnormal blood sugar level (hyperglycemia)
 - Type 2 : adult-onset diabetes, characterized by high blood sugar, relative lack of insulin and insulin resistance
- 2017 : 425 millions of diabetics, 90 % type 2
- Treatment : increase glycemic control
 - Medication
 - Diet
 - Exercise



➤ Behaviour change : what and how to change ?

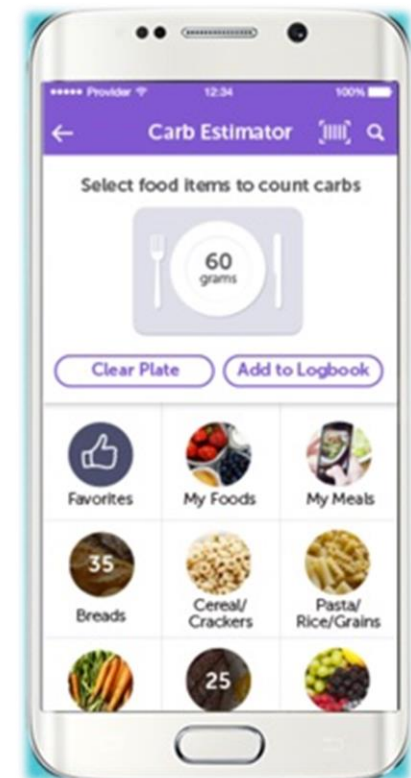
International Federation of Diabetes

PERSUASIVE TECHNOLOGY

- A lot of apps dedicated to diabetes self-management
 - Not very used
 - Why ?
 - How to increase this use ?
- Within 89 studies, 51 don't specified behavior change theory to justify their choices for intervention strategies

Orji & Moffatt, 2018

Bluestar by Welldoc



SELF-DETERMINATION THEORY

DECI & RYAN, 1985

- Positive results with an intervention based on SDT for increase glycemic control of type 2 diabetics

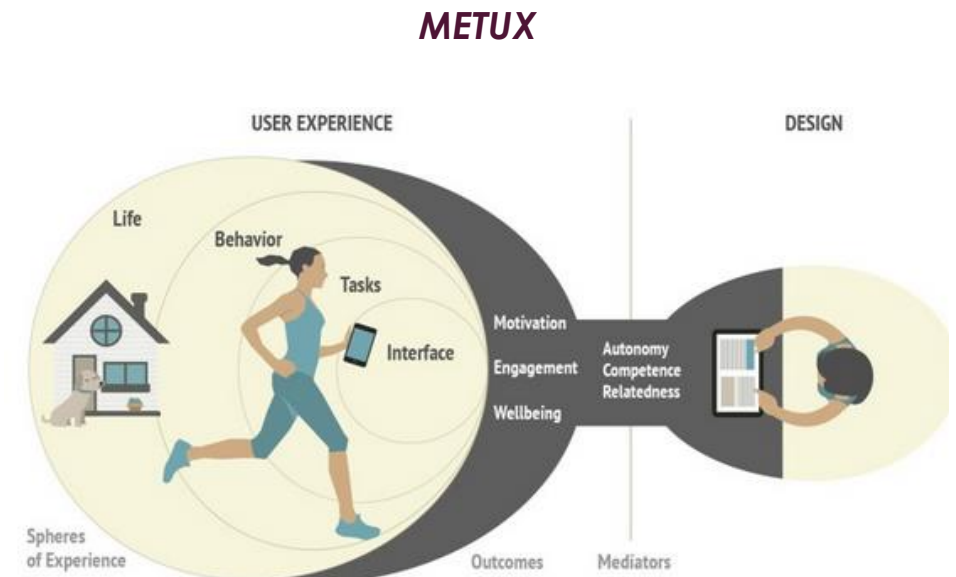
Williams, McGregor, Zeldman, Freedman & Deci, 2004

- Meta-analysis :

- 18 specific strategies to operationalized SDT
- Only 2 have shown a significant positive effect

Gillison, Rouse, Standage, Sebire & Ryan, 2018

- Model METUX to guide motivational technology design based on SDT



Peters, Calvo & Ryan, 2018

PERSONALITY

- Regulatory *Fit* Theory :

- Regulatory focus :

- Promotion focus v.s. prevention focus

Higgins, 1997

- Information congruent with chronic Regulatory Focus

Higgins, 2005

- Interaction with virtual agents

- Accurately perceived

Faur, Caillou, Martin & Clavel, 2015

- Matching between user and virtual agent

Faur, Martin & Clavel, 2015

- Big Five

- Correlation with glycemic control

- Neuroticism decrease glycemic control

Lane, McCASKILL, Williams, Parekh, Feinglos & Surwit, 2000

- Conscientiousness : indirect positive effect on glycemic control

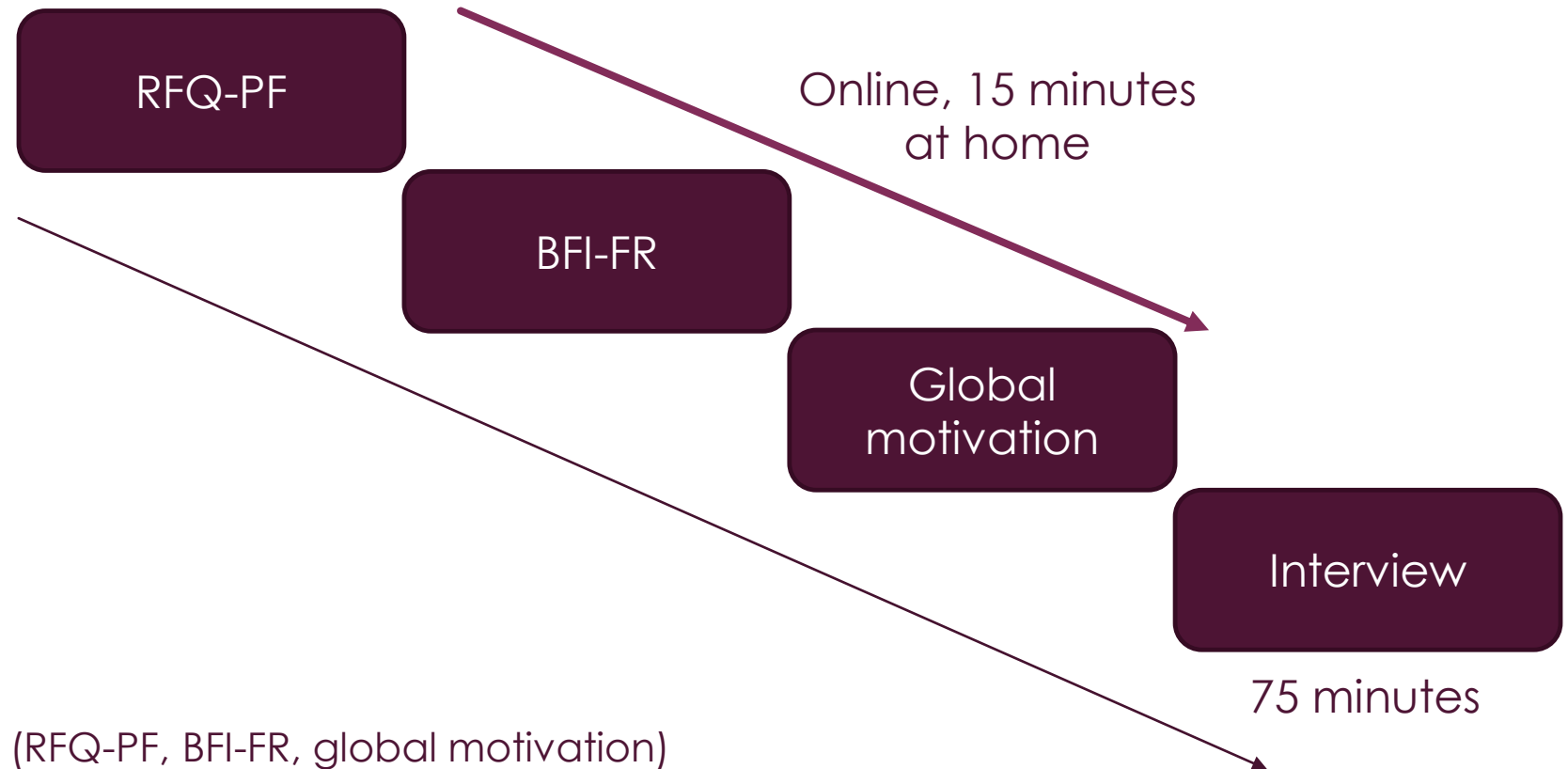
Skinner, Bruce, Davis & Davis, 2014

RESEARCH GOALS

- Understand the individual determinants of behavior change specific to type 2 diabetics :
 - Self-management (treatment, physical activity, diet)
 - Motivation type
 - Personality (regulatory focus, Big Five)
- Provide requirements and inform specifications of an mobile app
- Evaluate the app :
 - Its impact on glycemic control
 - Its impact on motivation type

INTERVIEWS

- Goal :
 - User-centered
 - Wanted functionalities
 - Profil
- Method :
 - 20 participants
 - 39 to 71 years
 - Type 2 diabetes
 - Long-acting insuline
 - 3 questionnaires online (RFQ-PF, BFI-FR, global motivation)
 - Interview semi-structured 75 minutes



AGENDA

- Currently : interviews analysis
- September 2019 : Experiment with proof of concept
- First trimester 2020 : clinical test
- Second trimester 2020 : Experiment with 2nd proof of concept
- Second trimester 2021 : 2nd clinical test





Thank you for your attention

REFERENCES

- Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale: Self-determination in personality. *Journal of research in personality*, 19(2), 109-134.
- Faur, C., Caillou, P., Martin, J. C., & Clavel, C. (2015, September). A socio-cognitive approach to personality: Machine-learned game strategies as cues of regulatory focus. In 2015 International Conference on Affective Computing and Intelligent Interaction (ACII) (pp. 581-587). IEEE.
- Faur, C., Martin, J. C., & Clavel, C. (2015). Matching artificial agents' and users' personalities: designing agents with regulatory-focus and testing the regulatory fit effect. In CogSci.
- Gillison, F. B., Rouse, P., Standage, M., Sebire, S. J., & Ryan, R. M. (2018). A meta-analysis of techniques to promote motivation for health behaviour change from a self-determination theory perspective. *Health psychology review*, 1-21.
- Higgins, E. T. (1997). Beyond pleasure and pain. *American psychologist*, 52(12), 1280.
- Higgins, E. T. (2005). Value from regulatory fit. *Current directions in psychological science*, 14(4), 209-213.
- Lane, J. D., McCASKILL, C. C., Williams, P. G., Parekh, P. I., Feinglos, M. N., & Surwit, R. S. (2000). Personality correlates of glycemic control in type 2 diabetes. *Diabetes care*, 23(9), 1321-1325.
- Orji, R., & Moffatt, K. (2018). Persuasive technology for health and wellness: State-of-the-art and emerging trends. *Health informatics journal*, 24(1), 66-91.
- Peters, D., Calvo, R. A., & Ryan, R. M. (2018). Designing for Motivation, Engagement and Wellbeing in Digital Experience. *Frontiers in Psychology*, 9.
- Skinner, T. C., Bruce, D. G., Davis, T. M. E., & Davis, W. A. (2014). Personality traits, self-care behaviours and glycaemic control in Type 2 diabetes: The Fremantle Diabetes Study Phase II. *Diabetic Medicine*, 31(4), 487-492.
- Williams, G. C., McGregor, H. A., Zeldman, A., Freedman, Z. R., & Deci, E. L. (2004). Testing a self-determination theory process model for promoting glycemic control through diabetes self-management. *Health Psychology*, 23(1), 58.