Josefsson. Int J Womens Health Wellness 2016, 2:033
Volume 2 | Issue 3
ISSN: 2474-1353

International Journal of
Women's Health and Wellness

Short Communication: Open Access

Mechanisms in Self-Determined Exercise Motivation. A PhD Thesis Summary

Karin Weman Josefsson*[1,2]

[1]Department of psychology, University of Gothenburgh, Sweden
[2]Centre of research on Welfare, Health and Sport, Halmstad University, Sweden

***Corresponding author:** Karin Weman Josefsson, Department of psychology, University of Gothenburgh, Sweden; Centre of research on Welfare, Health and Sport, Halmstad University, P.O. Box 823, SE-301 18 Halmstad, Sweden, Tel: 0046-0-704-863559, E-mail: karin.weman@hh.se*

Abstract

Regular physical activity and exercise bring about recognized health benefits and most Western countries have developed health recommendations, targeted information and programs to promote these behaviors. In spite of this, a large amount of the Western populations do not reach recommended levels of physical activity and exercise [1]. Because people in general are most likely aware of these benefits, one way to understand the modest uptake would be to study motivational aspects of these behaviors. This short communication paper is a summary of a PhD thesis entitled: "You don't have to love it - Exploring the mechanisms of exercise motivation using self-determination theory in a digital context.

Keywords

Exercise, Motivation, Self-determination

Introduction

The promotion of sustainable physical activity and exercise behaviours is considered a significant challenge and should therefore be considered a global health priority [2,3]. Research has also called for interventions with adequate theoretical foundations, enabling the study of the active ingredients of effective programs through mediating processes and indirect effects [4,5]. One way to understand human behaviour and how to tailor successful interventions, programs and policies would be to study motivational aspects and self-determination theory [6-8] is a promising framework in this area of research [9,10]. The core message in self-determination theory is that motivation quality and satisfaction of basic psychological needs will fuel the direction of human behaviour and psychological well-being [7,8]. According to self-determination theory, psychological need satisfaction will be promoted to the extent that the social environment is autonomy supportive, i.e. when fundamental human needs for autonomy (volition and feelings of choice), competence (feeling efficient and capable) and relatedness (feeling connected to and cared for by others) are nourished. It is also suggested that motivation quality matters more than mere motivation magnitude and that motivation quality is suggested to vary on a continuum ranging from completely self-determined (intrinsic) motivation, via various degrees of controlled behavioural regulations (extrinsic motivation) to amotivation (lack of motivation) at the other end. It is suggested that more self-determined forms of motivation will facilitate behaviour adoption and maintenance as well as psychological well-being. Psychological need satisfaction will also promote internalization of motivational regulations into more self-determined forms of motivation [7,8]. Recent research have suggested that a given behaviour can be fuelled by a combination of different motivational regulations simultaneously [11], also called

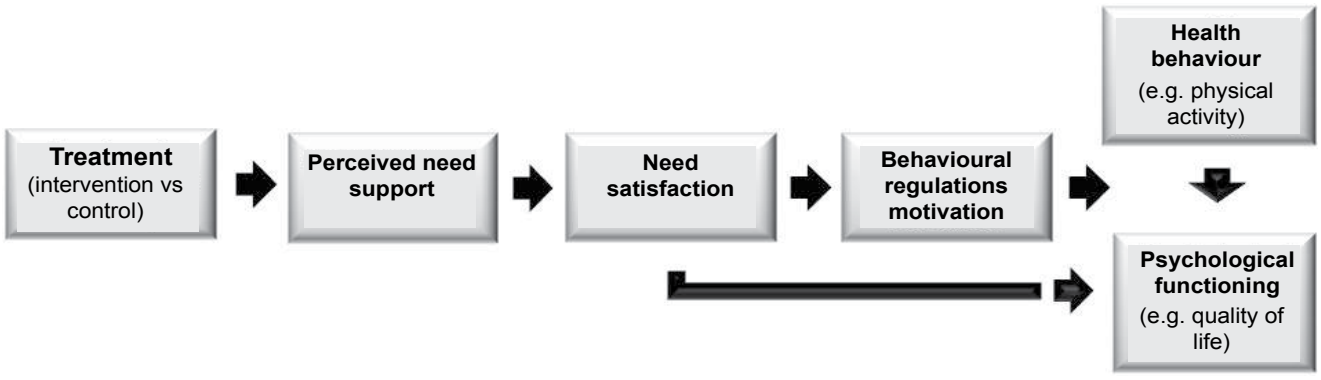

Figure 1: SDT process model.

ClinMed International Library

Citation: Josefsson KW (2016) Mechanisms in Self-Determined Exercise Motivation. A PhD Thesis Summary. Int J Womens Health Wellness 2:033

Received: July 20, 2016: **Accepted:** September 05, 2016: **Published:** September 08, 2016

the motivational soup [12] and that the regulations perhaps should be viewed as contiguous instead of continuous [13] (Figure 1).

The process model illustrating the relationships between autonomy support, psychological needs, motivational regulations and behavioural outcomes is based on mediating processes, i.e. that the effects of one variable (e.g. intervention) on an outcome variable (e.g. behaviour), works via a third variable (motivation) [9,14] (see figure 1). Therefore the study of mediating processes constitute a natural step to progress previous mean level analysis research by providing knowledge on the active ingredients of an intervention [15,16], and can together with study of moderating variables shed light on what works, for whom and why [17]. When creating health promotion programs and interventions, personal counselling is often an expensive solution and modern (digital) technology carry promising solutions for digital health promotion and e-health [18,19]. A growing amount of research supports the application of self-determination theory in digital physical activity and exercise programs [19-21], also showing sustainable effects [22].

Aims

Altogether, the main aims with this PhD thesis were to explore the underlying motivational processes of physical activity and exercise behaviour based on self-determination theory.

Methods

The PhD thesis consists of four separate studies out of which three (Study 1, Study III and Study IV) took place in a digital context, more specifically a step contest provided by the participants' employers as part of a health promotion program. In Study IV participants in the experimental group had additional access to a digital platform with autonomy supportive structures (such as goal setting tools, health literacy and relapse prevention strategies). An overview of the design, results and contributions of each study is presented in table 1.

Results and Discussion

To summarize, a number of findings could be highlighted. On a general level, all four studies support the suggested relations between psychological need satisfaction, motivation quality and behaviour according to self-determination theory. This thesis also extends previous mean-level (direct effects) research by examining motivational mechanisms via mediation and moderation analyses (indirect effects). In Study I, self-determined exercise motivation (i.e. identified regulation) mediated the relationship between basic psychological need satisfaction and exercise and this pattern was repeated in Study II, where the effect of the intervention was mediated by identified regulation. These findings not only support the utility of self-determination theory as a guiding framework in this context but could also add to the knowledge of how the effects of programs and interventions could be interpreted via underlying mechanisms (in this case the effect of identified regulation). It also supports the importance of self-determined motivationand internalizing meaningful values behind exercise participation for successful regulation of the behaviour [7]. This is why "you don't have to love it"; referring to the suggestion that intrinsic motivation might not be the most salient drive in successful regulation of behaviours as physical activity and exercise (see e.g. Teixeira, et al. [10]). In Study I, identified regulation acted as a mediator between psychological need satisfaction and exercise in women, but not for men, who instead had external regulation as an analogous mediator. Moderation analyses in Study IV also showed the motivational processes to vary qualitatively in different subgroups of gender and age. In essence, results from both studies indicate that women and older adults were more autonomously regulated, while men and younger adults seemed to be driven by more controlled regulations. A possible explanation might be that competition could be expected to pull for extrinsic motivation and maybe the results for men can be referred to the competitive context and external rewards (e.g. winning), while women might

Table 1: Overview of study design, results and contributions.

	Study I	Study II	Study III	Study IV
Design	Cross-sectional, digital platform	Two-wave RCT (face to face) intervention	Cross-sectional, digital platform	Three-wave RCT (digital) intervention
Theoretical foundation	SDT	SDT, MI, RPM CBT	SDT	SDT, RPM, TTM
Participants	1091 adult men (*n* = 286) and women (*n* = 805), aged 18-78 years (*M* = 45.0; *SD* = 11.7), all were active members of a web based Swedish exercise program.	64 Swedish undergraduate university students (women *n* = 49 and men *n* = 15) aged 19-49 years (*M* = 27.3; *SD* = 7.4).	Sample A: *N* = 1084, web-based exercise service members, mean age 45 (*SD* = 11.7). Sample B: *N* = 511 university students with a mean age of 22 years (*SD* = 3.3).	318 adult women (*n* = 279) and men (*n* = 40) aged 23-67 years (*M* = 46.7; *SD* = 9.4) participating in a digital step contest provided by their employer.
Measures	BPNES, BREQ-2, LTEQ	PNES, BREQ-2, LTEQ	BPNES, BREQ-2, LTEQ	BPNES, BREQ-2, LTEQ
Analyses	SEM, MVA	ANCOVA, MVA	LPA	ANCOVA, MVA
Results	Self-determined exercise motivation (identified regulation) mediated the relationship between basic psychological need satisfaction and exercise in the full sample. Moderationsof gender and age werealsofound.	Post-intervention effects showed increased levels of total and strenuous exercise, and this effect was mediated by self-determined motivation (identified regulation).	Six profiles were found in both samples. Some profiles were found in both samples whereas others were unique to each sample. More self-determined profiles demonstrated higher scores on need satisfaction and exercise.	The intervention increased levels of total, strenuous and light exercise and predicted mediators in terms of motivational quality. Moderations of gender and age were also found.
Limitations	Cross-sectional design, sample constitution (mainly women, high mean age) and self-reported exercise.	Small sample of convenience, self-reported exercise, exclusion of the relatedness need dimension and only having two measure points.	Cross-sectional design, sample constitution (mainly women, high mean age) and self-reported exercise.	High drop-out, sample constitution (mainly women, high mean age), self-reported exercise.
Contributions	Validation of Swedish translations of BPNES and BREQ-2 Employing a large sample of middle-aged adults in an e-health context Using SEM and advanced and modern recommended MVA Generating a full mediation model of steps 3-5 in the SDT process model along with moderating effects of gender and age, hence not only examining general relationships between variables but also when, for whom, and why they are associated.	Short-term exercise intervention Applying polytheoretical intervention tailoring Operating in a real-world setting Using advanced and modern recommended MVA	Support for the motivational soup, i.e., that motivation is a multidimensional construct and that people have different, sometimes competing, reasons for engaging in exercise. Using person-oriented analyses to examine within-person interactions of motivation and different regulations.	Short term exercise intervention in a digital context. Amotivation was involved in statistically significant main (time) effects, as well as in mediating the intervention effects. The intervention decreased controlled motivation (external regulation) and amotivation. Results of moderation analyses suggest that the stipulated mechanisms between exercise, motivation and psychological need satisfaction in this study hold for women, but not for men, and for older, but not for younger adults.

have participated for more social reasons, which would involve more autonomous drives. Given the specific conditions (e.g. digital setting, competition based exercise context and sample constitution), results should however be interpreted with caution and additional research is needed before generic conclusions can be drawn. Altogether, these novel findings are interesting and suggest that interventions and programs possibly should be tailored differently to subgroups based on for example age and gender.

Study III show some preliminary support for the notions behind motivational soup proposed by Patrick [12], by revealing different motivational profiles linked to exercise behaviour. Out of the six profiles found, three of them were quite similar in shape and possibly representing more stable patterns of motivation quality subgroups according to theoretical expectations and previous research [see e.g. 23,24]. The other three profiles represent more complex and dynamic results of within-person effects of interacting motives and might in part also support the critique against the continuum structure raised by Chemolli, et al. [13]. In Study IV, results showed that the digital intervention had positive main effects on motivation quality, psychological need satisfaction and exercise behaviour and that the effects on total exercise was mediated by amotivation. Moreover, moderation analyses showed the digital intervention to have most effect on participants with low scores on identified regulation and those who mainly engaged in low intensity exercise at baseline. The fact that participants who did not feel motivated to exercise at baseline (i.e. amotivated persons) displayed best intervention effects in terms of exercise behaviour is one of the most interesting results in this study. Approximately 30 per cent of a general population can be expected to be amotivated to exercise and physical activity [25] and they are often hard to reach in interventions and campaigns, simply because they rarely seek out such activities or situations and do not feel related information to be meaningful to them [26,27]. Hence, this is a challenging but also highly relevant group to reach and the results of Study IV constitute a preliminary step towards the understanding of how to reach and work with amotivated persons and stimulate motivation among those who yet have not found the way on their own. In sum, results of Study IV might indicate that this digital tool has a potential to be most efficient for those who need it most and longitudinal follow-up studies over a nine month period have been initiated to further explore these mechanisms.

In conclusion, the results in this thesis generally support the suggested mechanisms of motivation according to self-determination theory and that these mechanisms can be manipulated in interventions. It also extends previous research by applying moderation and mediation analyses and within-person profile analyses, adding to the understanding of what motivational strategies might work, and for whom. Future research should further examine the observed effects, especially the mediating effect of amotivation, the moderating effects of gender and age and the within-person motivational profiles to illuminate potential explanations and to inform practical implications. For example, acknowledging the potential significance of identified regulation (i.e. valuing the outcomes of engagement) might be a useful approach in the promotion of demanding behaviours such as physical activity and exercise. Moving from introjects like guilt towards a more internalised regulation as identified motivation has the potential to increase sustainability and maintenance of behaviour as well as psychological well-being. The full text thesis can be obtained at https://gupea.ub.gu.se/handle/2077/42217.

Acknowledgements

This research was funded by Halmstad University, University of Gothenburg and the Swedish KK-foundation.

Ethical Statement

The data collection and treatment of the participants has been in line with the APA ethical standards and approved by the regional ethical board. The author declares that there are no competing interests and that the ClinMed author guidelines are followed.

References

1. (2011) Insufficient physical activity 2008. Prevalence of insufficent physical activity, ages 15+, both ages. World Health Organization.
2. Hallal PC, Bauman AE, Heath GW, Kohl HW 3rd, Lee IM, et al. (2012) Physical activity: more of the same is not enough. The Lancet 380: 190-191.
3. Hallal PC, Andersen LB, Bull FC, Guthold R, Haskell W, et al. (2012) Global physical activity levels: Surveillance progress, pitfalls, and prospects. The Lancet 380: 247-257.
4. Bauman AE, Reis RS, Sallis JF, Wells JC, Loos RJF, et al. (2012) Correlates of physical activity: Why are some people physically active and others not? The Lancet 380: 258-271.
5. Bauman AE, Sallis JF, Dzewaltowski DA, Owen N (2002) Toward a better understanding of the influences on physical activity. Am J Prev Med 23: 5-14.
6. Deci EL, Ryan RM (1985) Intrinsic motivation and self-determination in human behavior. Plenum Press, New York, NY.
7. Deci EL, Ryan RM (2000) The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. Psychological Inquiry 4: 227-268.
8. Ryan RM, Deci EL (2002) Overview of self-determination theory: An organismic dialectical perspective. In: RM Ryan, EL Deci, Handbook of Self-Determination Research. University of Rochester Press, Rochester, NY.
9. Fortier MS, Duda JL, Guerin E, Teixeira PJ (2012) Promoting physical activity: development and testing of self-determination theory-based interventions. Int J Behav Nutr Phys Act 9: 20.
10. Teixeira PJ, Carraça EV, Markland D, Silva MN, Ryan RM (2012) Exercise, physical activity, and self-determination theory: A systematic review. Int J Behav Nutr Phys Act 9: 78.
11. Vansteenkiste M, Sierens E, Soenens B, Luyckx K, Lens W (2009) Motivational profiles from a self-determination perspective: The quality of motivation matters. Journal of Educational Psychology 101: 671-688.
12. Patrick H (2014) Ascending mount maslow with oxygen to spare: A self-determination theory perspective. Psychological Inquiry 25: 101-107.
13. Chemolli E, Gagné M (2014) Evidence against the continuum structure underlying motivation measures derived from self-determination theory. Psychol Assess 26: 575-585.
14. Fortier MS, Wisemana E, Sweetb SN, O'Sullivanc TL, Blanchardd CM, et al. (2011) A moderated mediation of motivation on physical activity in the context of the Physical activity counseling randomized control trial. Psychology of Sport and Exercise 12: 71-78.
15. Cerin E, Mackinnon DP (2009) A commentary on current practice in mediating variable analyses in behavioural nutrition and physical activity. Public Health Nutr 12: 1182-1188.
16. Rhodes RE, Pfaeffli LA (2010) Mediators of physical activity behaviour change among adult non-clinical populations: a review update.International Journal of Behavioral Nutrition and Physical Activity 7: 37.
17. Hardcastle SJ, Hagger MS (2016) Psychographic profiling for effective health behavior change interventions. Front Psychol 6.
18. Marsch LA, Gustafson DH (2013) The role of technology in health care innovation: A commentary. J Dual Diagn 9: 101-103.
19. Williams GC, Niemiec CP, Elliot AJ, LaGuardia JG, Gorin AA, et al. (2014) Virtual Look AHEAD program: Initial support for a partly virtualized intensive lifestyle intervention in type 2 diabetes. Diabetes Care 37: e169-170.
20. Patrick H, Canavello A (2011) Methodological overview of a self-determination theory based computerized intervention to promote leisure-time physical activity. Psychol Sport Exerc 12: 13-19.
21. Pingree S, Hawkins R, Baker T, duBenske L, Roberts LJ, et al. (2010) The value of theory for enhancing and understanding e-health interventions. Am J Prev Med 38: 103-109.
22. Friederichs SA, Bolman C, Oenema A, Lechner L (2015) Long term effects of self-determination theory and motivational interviewing in a web-based physical activity intervention: randomized controlled trial. The International Journal of Behavioral Nutrition and Physical Activity 12: 101.
23. Guerin E, Fortier M (2012) Motivational profiles for physical activity: Cluster analysis and links with enjoyment. Revue phénEPS/PHEnex Journal 4: 1-21.
24. Friederichs SAH, Bolman C, Oenema A, Lechner L (2015) Profiling physical activity motivation based on self-determination theory: a cluster analysis approach. Psychology 3: 1.
25. Rhodes RE, deBruijn GJ (2013) How big is the physical activity intention-behaviour gap? Ameta-analysis using the action control framework. Br J Health Psychol 18: 296-309.
26. Hardcastle SJ, Hancox J, Hattar A, Maxwell-Smith C, Thøgersen-Ntoumani C, et al. (2015) Motivating the unmotivated: how can health behavior be changed in those unwilling to change? Front Psychol 6: 835.
27. Thøgersen-Ntoumani C, Ntoumanis N (2006) The role of self-determined motivation in the understanding of exercise-related behaviours, cognitions and physical self-evaluations. J Sports Sci 24: 393-404.