



Universiteit
Leiden
The Netherlands

The desperation threshold: a model to explain decisions in poverty

Du Buisson de Courson, B.

Citation

Du Buisson de Courson, B. (2026, April 7). *The desperation threshold: a model to explain decisions in poverty*. Retrieved from <https://hdl.handle.net/1887/4301048>

Version: Publisher's Version

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/4301048>

Note: To cite this publication please use the final published version (if applicable).

The desperation threshold: a model to explain decisions in poverty

De wanhoopsdrempel: een model om beslissingen in armoede te begrijpen

Proefschrift
ter verkrijging van
de graad van doctor aan de Universiteit Leiden,
op gezag van rector magnificus prof.dr. S. de Rijcke,
volgens besluit van
het college voor promoties
te verdedigen op
7 april 2026
klokke 11:30 uur
door Benoît du Buisson de Courson
geboren te 16 juni 1998 in Paris

Promotor

Prof.dr.dr. Jean-Louis van Gelder

Co-promotores

- Prof.dr. Willem Frankenhuis
- Prof.dr. Daniel Nettle

Promotiecommissie

- Prof.dr. Wilco van Dijk
- Prof.dr. Eric van Dijk
- Dr. Loreen Tisdall (Senior Researcher, Basel University)
- Prof.dr. Catherine Eckel (Professor in the department of Economics, Texas A&M University)
- Dr. Daniel Krupp (Associate Professor, Lakehead University)

This work has been funded and supported by the Max Planck Institute for the Study of Crime, Security and Law (Freiburg im Breisgau, Germany) and by the Institut Jean Nicod, Département d'études cognitives, École Normale Supérieure-PSL, EHESS, CNRS (Paris, France).

Cover designed by Poorvi Iyer.

À ma maman, qui a la classe
À mon papa, qui m'a subtilement transmis sa soif de comprendre des trucs

Table of contents

Summary	9
Samenvatting	10
I Introduction	11
1.1 Poverty is unpleasant	11
1.2 Why model	14
1.2.1 “Models do not investigate nature”	14
1.2.2 We are all modelers	15
1.2.3 Verbal models are vague	15
1.2.4 Verbal models are fallible	16
1.2.5 Poverty and risk taking need formalisation	16
1.3 What is a good model?	17
1.3.1 Abductive reasoning	17
1.3.2 State-dependent rational choice	18
1.3.3 Methodological individualism	19
1.3.4 Toy models	19
1.3.5 What for?	20
1.4 The desperation threshold: an old, simple, but radical idea	21
1.4.1 Agricultural economics	21
1.4.2 Development economics	22
1.4.3 Evolutionary biology and psychology	22
1.5 Dissertation outline	23
1.5.1 Chapter 2: Why is violence high and persistent in deprived communities? A formal model	23
1.5.2 Chapter 3: Why does poverty increase time discounting? Present needs and uncertain future	24
1.5.3 Chapter 4: Poverty is associated with both risk avoidance and risk taking: empirical evidence for the desperation threshold model from the UK and France	24
1.5.4 Chapter 5: Explaining the paradoxical effects of poverty on decision making: The Desperation Threshold Model	24
2 Why is violence high and persistent in deprived communities? A formal model	26
2.1 Abstract	27
2.2 Introduction	27

2.3	Model	29
2.3.1	Structure of the model	29
2.3.2	Individual strategies and fitness	30
2.3.3	Population simulations	31
2.4	Results	32
2.4.1	Individual decisions	32
2.4.2	Population simulations	33
2.4.3	Multiple equilibria and hysteresis	34
2.5	Discussion	35
2.5.1	Desperation triggers high violence	36
2.5.2	Relative poverty or absolute poverty?	37
2.5.3	Future directions	38
2.5.4	Implications for policy and intervention	38
	Funding and acknowledgements	39
	Data transparency and reproducibility	39
2.6	Appendix	39
2.6.1	The model	39
2.6.2	Supplementary results	43
3	Why does poverty increase time discounting? Present needs and uncertain future	52
3.1	Abstract	52
3.2	Introduction	52
3.3	Model	54
3.4	Results	57
3.4.1	Analytical derivation	58
3.4.2	The effect of resources	58
3.4.3	The effect of future expectatoinis	60
3.5	Discussion	61
3.6	Appendix	64
3.6.1	Mathematical derivations	64
3.6.2	Sensitivity analysis	70
4	Poverty is associated with both risk avoidance and risk taking: empirical evidence for the desperation threshold model from the UK and France	73
4.1	Abstract	74
4.2	Introduction	74
4.3	Theory	76
4.4	Methods	78
4.4.1	Panel	78
4.4.2	Measures	78
4.4.3	Analysis strategy	79
4.5	Results	80
4.5.1	Descriptive analysis	80

4.5.2	Analysis 1	82
4.5.3	Analysis 2: do individuals with low resources vary more in risk taking?	85
4.5.4	Ruling out alternative explanations	87
4.6	Discussion	87
4.6.1	Summary of results	87
4.6.2	Alternative explanations	89
4.6.3	Limitations	90
4.6.4	Implications	90
4.7	Funding and acknowledgements	91
4.8	Data transparency and reproducibility	92
4.9	Appendix	93
5	Explaining the paradoxical effects of poverty on decision making: The Desperation Threshold Model	99
5.1	Abstract	100
5.2	Poverty and risk taking: A paradoxical relationship	100
5.3	The desperation threshold model	101
5.3.1	The core of the model	101
5.3.2	Grounding the basic assumptions	102
5.3.3	The predictions of the DTM	103
5.3.4	Antecedents of the DTM	106
5.3.5	The DTM and Prospect Theory	107
5.4	Empirical evidence to date	108
5.4.1	Psychological experiments	110
5.4.2	Choice tasks in relation to real-world resources	115
5.4.3	Real-world choices in relation to real-world resources	118
5.4.4	Natural experiments	120
5.5	Population consequences of the DTM	121
5.5.1	Explaining associations between inequality and aggregate outcomes	121
5.5.2	Impact of welfare states on risky behaviours	122
5.5.3	Deterrence of crime	123
5.6	Critical issues	123
5.6.1	Is the threshold a subjective or objective construct?	124
5.6.2	Is the threshold level absolute or relative?	124
5.6.3	Is the DTM falsifiable?	125
5.7	An agenda for DTM research	125
5.7.1	Proximal representations: thresholds in the mind	125
5.7.2	The connection to wellbeing and poverty research	126
5.7.3	Moral and ethical thought	127
5.7.4	Sociopolitical implications	128
5.8	Conclusion	128

6	General discussion	130
6.1	Summary of the findings	130
6.2	Concluding remarks	131
6.2.1	Social life and poverty	131
6.2.2	The desperation threshold: an obvious, but disturbing idea	132
6.2.3	What next?	132
	Curriculum Vitae	134
	Acknowledgements	135
	References	137