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# Explaining the paradoxical effects of poverty on risk taking: The Desperation Threshold Model

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**Short abstract**

Why does poverty sometimes lead to risk aversion, and other times to risk taking? The Desperation Threshold Model (DTM) explains this paradox through the notion of basic needs. Poverty in which basic needs can still be met generates risk aversion; the priority is to avoid any loss. Poverty in which basic needs can no longer be met generates desperate risk taking. We review evidence supporting the DTM from multiple disciplines. The DTM helps link individual decision making to societal issues such as economic inequality, crime deterrence, and welfare policy. We discuss areas for future research.

**Long abstract**

The impacts of poverty and material scarcity on human decision making appear paradoxical. One set of findings associates poverty with risk aversion, whilst another set associates it with risk taking. We present an idealised rational-choice model, the Desperation Threshold Model (DTM), that explains how both these accounts can be correct. The DTM assumes that there are basic needs whose satisfaction is not fully divisible. This generates an S-shaped utility function for material resources. The value of gaining a dollar is at first small (because even with the extra dollar, basic needs still cannot be met); then large (because the extra dollar enables basic needs to be met); and then small again. Just above the basic needs threshold, people's main concern is not falling below, and they are predicted to avoid risk especially strongly. Below the threshold, their most important concern is jumping above, and they are predicted to take risks that would otherwise be avoided. Versions of the DTM have been proposed under various names across biology, anthropology, economics and psychology. We review a broad range of relevant empirical evidence from a variety of societal contexts. Though the model primarily concerns individual decision making, it connects to a range of population-scale and societal issues such as: the consequences of economic inequality; the deterrence of crime; and the optimal design and behavioural consequences of the welfare state. We discuss interpretative issues, and suggest areas for future DTM research that bridges disciplines.

**Key words**: poverty, risk-taking, risk-aversion, decision-making, inequality, crime, deterrence

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1. Poverty and risk taking: A paradoxical relationship

In a sample of 17,000 Swedes, those with fewer financial resources are less likely to invest in risky assets like stocks and shares (Calvet & Sodini, 2014). The relationship holds even after controlling for how much money they invest in total. It's not just that poorer individuals save less (which is unsurprisingly the case), it's that they are less likely to choose risky assets for what they *do* save. Since risky assets generally have higher long-run financial returns, poorer individuals, by avoiding risk, may be missing out on long-term gains. Taking less risk when one has fewer resources seems perfectly intuitive: one has less of a buffer in the event of a bad outcome, so one's first priority should be to avoid the financial situation getting any worse.

Yet consider U.S. state lotteries. These are highly risky: for every dollar handed over, the average return is only 70c; but that 70c on average is distributed as a large chance of getting nothing, and a small chance of getting a big prize. Income is a strong predictor of buying lottery tickets: the *lower* people's incomes, the *more* they buy. In the 1% poorest zip codes in states with lotteries, the average adult spends $600 a year on lottery tickets, compared to $150 a year in the richest 1%. This is four times as much in absolute terms, and thirty times as much as a share of income (The Economist, 2024). This seems intuitive too: when people have so little that they can't make ends meet, they will grasp at any chance of getting a lump more resources, even a highly risky chance. An alternative example is property crime, a risky behaviour par excellence (Epper et al., 2022). Property crime rates are higher in poor neighbourhoods (Patterson, 1991), and in periods of high unemployment (Raphael & Winter-Ebmer, 2001).

These examples illustrate two plausible accounts of what poverty (by which we here mean low levels of material resources) does to decision making. The first is that people in poverty cannot afford to take risk; the second is that they are especially prone to do so. Both accounts have been discussed and supported in the literature over decades (Kish-Gephart, 2017). As a consequence, the literature is confusing, containing 'at least two distinct and, *prima facie*, inconsistent views' (A. Banerjee, 2004, p. 60): that people in poverty have too much to lose, and hence have a safety-first attitude; and that they have little left to lose, and hence throw prudence out the window.

This paper presents and discusses a model of rational decision making, the desperation threshold model (DTM). The DTM does not just accommodate, but actually predicts, that

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poverty would sometimes increase and sometimes decrease risk taking. The basic idea of the DTM is not new to us: it has been proposed or implied in several disciplines at several times. However, the various incarnations of the DTM have not been unified using a common vocabulary; indeed, they have tended to ignore one another. The DTM's assumptions have not been fully justified; the empirical evidence for it has not been brought together in one place; and its explanatory potential has not yet been fully explored. The DTM provides a bridge between individual-level (micro-) decision making and population-level (macro-) processes. As such, it can be a parsimonious lens for understanding not just individual decisions under risk, but also phenomena at the level of populations and societies, such as the effects of inequality and different kinds of institutions on aggregate behaviour. We will review some of these societal applications; discuss issues of interpretation and falsifiability; and suggest specific directions for future research. First, though, we present the core assumptions of the DTM.

## 2.The Desperation Threshold Model

### 2.1 The core of the model

When faced with a risky choice—such as deciding whether to take a bet—how do people make decisions? Other things equal, they would prefer a larger payoff to a smaller one. However, a payoff twice the size is not necessarily twice as good. Since the work of Bernoulli (1738), researchers have captured the logic of decisions with the idea that people maximize not the expected financial payoff, but expected utility. Utility is an underlying value currency that drives decisions. Its relationship to material resources is assumed to be non-linear, generally concave. Choice theorists are not committed to the claim that people actually compute and maximise a single valuation currency: this is not a realistic account of the psychological processes involved. Rather, utility functions give us a useful language of idealisation for describing the structure of incentives, and for computing rational responses to them.

The DTM applies the expected-utility framework to utility functions that have a particular shape. The utility payoff of getting another unit of resources (the marginal value) is assumed to be small at very low levels of resources, then larger, then smaller again once a threshold level of resources has been obtained. This smaller-larger-smaller pattern means that utility

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functions have an S-shape, like the one in figure 1; the second derivative is positive at low levels of resource and negative at higher levels.

The DTM also posits a *reason* for the small-large-small pattern of marginal utility. Individuals have basic needs. Failing to meet basic needs is dire, and basic needs are not fully divisible. This means that one cannot get half the value of being alive by eating half the number of calories necessary for life, or half the utility of having an apartment by paying half the rent. If one cannot meet basic needs, it does not very much matter whether one has failed to do so by $5 or $500: one is at 'rock bottom'. On the other hand, for a person above the basic needs' cliff', jeopardising their position would be much more disadvantageous than further gain would be advantageous.

This leads us to a formal statement of the assumptions of the DTM:

(i) the function describing the value of resources to the chooser has such a shape that the marginal benefit is smaller, then larger, then smaller as resources increase; and:

(ii) the reason for this shape is that the chooser has basic needs that it is dire not to meet, and that are not fully divisible.

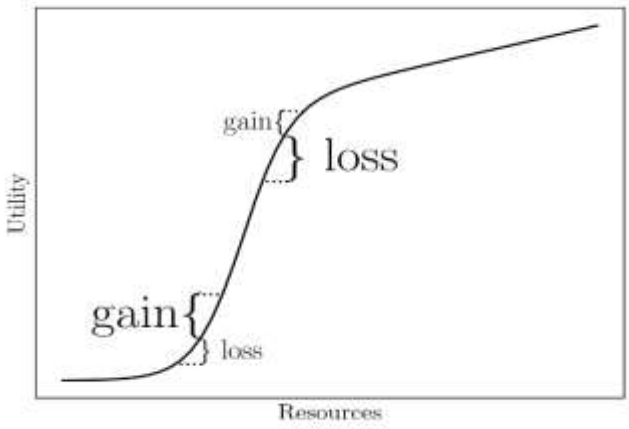



**Figure 1:** Graphical illustration of the shape of utility function assumed by the DTM, along with a visualization of why current level of resources determines risk-taking. In the increasing-marginal-returns segment of the S-shape, a resource gain brings more utility than an equal loss takes away, and the individual should take risk. In the diminishing-marginal-returns segment, the reverse is true, and the individual should be risk averse. Note that the

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DTM does not require this exact functional form. A step function, for example, would also meet the definition of the DTM.

The central insight found in all versions of the DTM concerns optimal choice for decisions that involve risk. Risk is defined in this context as variance in possible outcomes. For example, a lottery that might result in a £10 win, or might result in the loss of the £2 stake, is risky. Accepting £1 for sure is not. Under the DTM, the expected utility impact of a risky decision depends on where on the resource curve one currently stands (figure 1). At the top of the cliff, any loss would be much worse than a gain would be good. This makes upside gain much less interesting than avoiding the possible loss. At the bottom of the cliff, a small gain in resources could mean a huge utility gain, while a further loss of resources can scarcely make things worse. Thus, a rational agent should avoid risk when resources are just above the threshold level, and choose risk when resources are below the threshold level. This principle is intuitively obvious. In the last minutes of a knockout game of football (soccer), the leading team typically plays safe and tries to use up time, avoiding risk. The trailing team, on the contrary, takes desperate actions, such as the goalkeeper leaving their net empty to try to score a goal. What is usually a terrible idea becomes reasonable due to the shape of the value function for goals: losing 1-0 is not much worse than losing 2-0; but drawing 1-1 is dramatically better.

### 2.2 Motivating the assumptions

As the definition in section 2.1 shows, the DTM assumes a particular shape to utility functions; and an underlying reason for this shape, namely that there are basic needs that are not completely divisible. What motivates these assumptions?

We start with basic needs. The model would be hard to justify if there was no set of wants that people found more important than others, or if the satisfaction of wants was always perfectly divisible. The idea that some wants are obligate and pressing enough to deserve a special name and status has a long history (Wiggins, 1998). The claim that the inability to satisfy these basic needs is dire enough, relative to other possible outcomes, that it should structure our decision making appears, explicitly or tacitly, in many philosophical positions, such as sufficientarianism (Timmer, 2022), the difference principle (Rawls, 1971), and political republicanism (Pettit, 2014). Wolff et al. (2025), in a study of adults from the UK and France who had experienced poverty, found a high degree of consensus on what basic needs are. Centrally, these encompass material safety and bodily integrity (food, water,

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shelter, warmth). They also include ‘the social basis of respect’ (Rawls, 1971). This is whatever one needs to have in order to be considered a recognised and adequate member of society; to be, as Sen (1983) puts it: ‘free from public shame from failure to satisfy convention’ (p. 167). Smith (1776) similarly stated that ‘by necessities, I understand not only the commodities which are indispensably necessary for the support of life, but whatever the customs of the country render it indecent for creditable people…to be without. […] a creditable day labourer would be ashamed to appear in public without a linen shirt.’ (pp. 869-870). In like vein, Townsend (1979) argued that the poverty line was a point where, descending the income scale, a large number of families dropped out or were excluded from their community’s style of living. The cliff in the DTM is at the level of material resources that allows somatic and basic social integrity to be maintained (we return to the implications of this in 5.2).

People often appear to recognise this cliff; specifically, that once they are below it, things could barely be worse, and getting back above it has priority over other considerations. We can see this for example in the literature on motivations for acquisitive criminal offending. Camp (1968) found that bank robbery is driven by a ‘nothing to lose' feeling. Jacobs & Wright (1999) reported that ‘with few exceptions, the decision to commit a robbery arises in the face of...a pressing need for fast cash’ (p. 153). Rossmo & Summers (2022) found that many respondents distinguished offending based on ‘wants’ from offending based on 'needs’. They specifically invoke the ‘quantum jumps’ in utility arising from incomplete divisibility of these needs: ‘[the person] needs a specific amount of money such that anything less has limited value; for example…a debt with an impending payment due or [the requirement to] come up with the rent in order to avoid eviction…it is a matter of all or nothing’ (p.7). It is reasonable to assume that incomplete divisibility is a widespread feature of basic needs. A person can be evicted for paying 90% of their rent; only if they pay 100% do they get the right to a home. Other basic needs seem to correspond to this pattern.

This leads us to the motivation for the DTM’s signature S-shaped utility function, with its combination of marginally increasing and marginally diminishing returns. Diminishing marginal returns to resources among people who are adequately well off (i.e. above the cliff) is a widespread and longstanding assumption that appears well founded. In affluent populations and across a broad range of incomes, there is abundant evidence for diminishing marginal returns of income for happiness, life satisfaction, and health (Backlund et al., 1996; Kahneman & Deaton, 2010; Nettle et al., 2025; Nettle & Dickins, 2022).

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The more distinctive element of the DTM is the assumed zone of increasing marginal returns at the lower end of the resource spectrum. Such a cliff is a necessary consequence of the incomplete divisibility of basic needs: *if* there is a basic need fundamental to wellbeing, and *if* its satisfaction is not fully divisible, then a steep change in utility must happen around the point where it can be satisfied. A rock bottom follows too, as long as we grant that if basic needs are not satisfied, welfare is dire and non-basic wants cannot be satisfactorily fulfilled. Once an individual has a level of resources *x* so inadequate that they cannot satisfy their basic needs, then having 50% of *x* is no worse than having *x*. Resources and needs satisfaction must then be decoupled at the point where no basic needs are met. There is also empirical evidence for S-shaped utility functions. Much of this infers the underlying function from the pattern of risky choices (section 3). Thus, this evidence is consistent with the DTM's predictions, but it cannot also serve as independent grounds for the DTM's assumptions. Attempts to measure the shape of utility functions more directly are sparse, largely because of the tradition of interpreting utility solely as whatever is revealed through economic choices. The individual welfare function literature of the 1970s and 1980s used survey data in which respondents stated what levels of income they would consider 'very bad', 'bad'...'good', or 'excellent' (Kapteyn & Wansbeek, 1985; Van Praag, 1971). The 'very bad' income level was assumed to carry a utility of zero, and the 'excellent' a utility of one; the income values given for the other descriptors were used to estimate the shape of the function across the interval in between. The resulting functions were generally S-shaped. The researchers also speculated that the S-shape likely arose from the indivisibility of basic needs 'increasing marginal utility at the lower income range seems quite a plausible property….If income is below subsistence level, each extra dollar brings one closer to the point where survival is possible and hence each extra dollar carries a higher marginal utility' (Kapteyn & Wansbeek, 1985, p. 342).

Nettle & Wolff (2025) improved on the individual welfare function paradigm by having 300 UK adults rate many more different incomes (41), and respond on a 0-100 scale rather than using verbal descriptors. The resulting individual functions (figure 2A) were S-shaped. The first derivative first grew then declined with increasing income (figure 2B), whilst the second derivative was positive at incomes below around the lower quartile of the UK income distribution, then negative at higher incomes (figure 2C). The position of the S-shape was affected but not completely determined by people's personal incomes: people on the lowest incomes switched from increasing to diminishing marginal returns at incomes higher than

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they actually earned, whilst people on medium and high incomes showed the switch at incomes lower than what they actually earned.

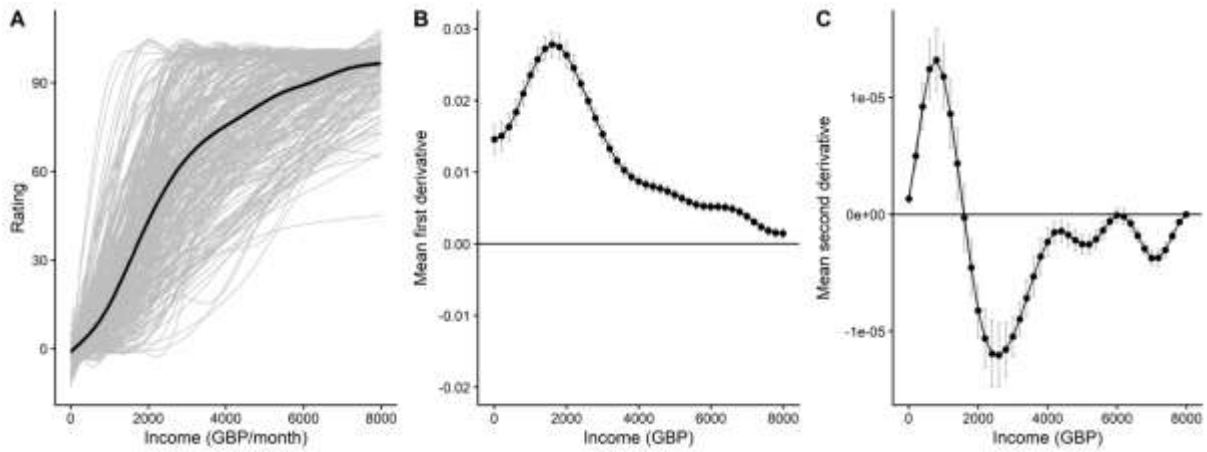



**Figure 2.** Psychological utility functions for monthly income for 300 UK adults, from Nettle and Wolff (2025). Functions are fitted using Generalized Additive Models. A. Fitted functions for individual respondents (grey) and all data pooled (black). B. Mean first derivative of fitted functions against income. C. Mean second derivative of fitted functions against income. Error bars show 95% confidence intervals.

Another relevant empirical literature links individual financial resources to material deprivations. A material deprivation is the inability, for financial reasons, to achieve a key objective such as having adequate and substantial meals or buying new clothes. These objectives are chosen so as to represent the goods and services necessary to lead a decent life. In affluent countries, the empirical relationship between income and the number of material deprivations is typically non-linear, with three regimes (Blasco, 2023). Between the lowest income and around half the country median, the relationship between income and the number of deprivations is a flat line (and the number of deprivations is high). Between around 0.5 and 1.5 times the median income, there is a steep negative relationship; each increment of extra income reduces the number of deprivations. Above 1.5 times median income, there is again a flat line, because the number of deprivations is zero. Thus, as the DTM requires: at first, small increments in income are insufficient to make any difference to deprivations; then around the cliff level, extra resources rapidly reduce deprivations; and this flattens off once all deprivations are gone. There are caveats to this interpretation. Blasco (2023) argues that the flat relationship between income and deprivations below 0.5 times the median income is partly a measurement artefact. People with incomes this low are very heterogeneous; some

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may be living off capital or support from family. Thus, the incomes people report in this bottom part of the distribution are simply a poor guide to their actual resources, resulting in the flat line. Nonetheless, Blasco's work offers a further independent grounding for a DTM-like shape to the value of income.

### 2.3 The predictions of the DTM

Having introduced the DTM, we turn to its predictions. We have mentioned two:

> *Caution prediction*. Individuals whose resources are only just adequate to meet their basic needs will show greater avoidance of risk, compared to those whose resources are abundant;
>
> *Desperation prediction*. Individuals who are unable to meet their basic needs will take greater risk, compared to those who can meet their basic needs.

In these predictions, 'adequate' and 'ability to meet' strictly refer to an expectation of resource availability relative to need over a relevant immediate timescale. In other words, the critical variable may not be the amount of money in the decision maker's wallet today, but the amount they can anticipate being in there at the end of the month when essential bill falls due. Likewise, they apply specifically to the taking of risk in activities that can generate material resources; there is no direct reason, in the model, that material resources should affect risk taking on dimensions that do not involve material gain or loss.

Though these predictions do follow from the assumptions, they are too vague as stated. For example, the DTM does not predict that people just above the threshold will never take *any* risk. Some risks are very attractive, like a $1 ticket with a 95% chance of winning $1000. We would expect pretty much anyone to take this risk. To make the prediction more precise, it is helpful to classify risky options on the basis of the average return if they were taken many times. This is the sum of the possible resource outcomes multiplied by their respective probabilities (statistically, the expected value). A 'positive-average-return 'risk is one where this number is positive; if you took it many times, you would gain more than you lost. For a 'negative-average-return 'risk, your long-run losses would be larger than your gains. If the mapping of monetary resources to utility were linear, it would be simple: one would take positive-average-return risks and avoid negative-average-return ones.

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This helps us make the DTM predictions more specific. Let us define the *risk premium* as the amount by which the average return of a risky option has to exceed zero in order for a rational person to take it. The DTM predicts that the risk premium of someone just above the threshold is positive: they need a large positive risk premium to offset the chance of plunging below the threshold on the downside. This means they will rationally leave some risks on the table that would, on average, make them financially better off. By contrast, the risk premium of a person below the threshold is negative (figure 3). They have to take risks with a negative premium, just because of the chance of returning above the threshold, even if they know that on average these will make them financially poorer.

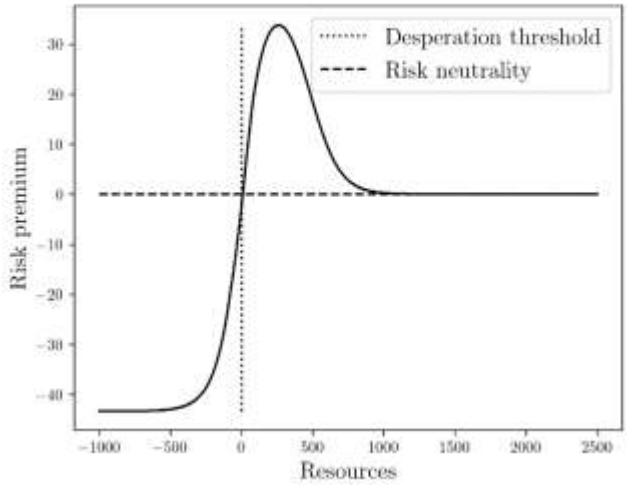



**Figure 3:** The 'risk premium', the minimum amount *x* that is required to make an option leading with equal probability to a payoff of -100 or (100 + *x*) resource units worth taking, as a function of current resources. The figure assumes an S-shaped utility function (U(x) = 1/(1+exp(-x)) + (x>0)*x/50) whose maximum steepness is at 0. Where the risk premium is positive, the chooser would leave some risky options on the table even knowing that those options would on average improve their financial situation. Where the risk premium is negative, they would take some risky options even knowing that on average those risks will make them financially worse off.

Figure 3 helps clarifies that the DTM predicts that different levels of material resource will lead not just to different levels of risk-taking, but to the taking of risks of different kinds. In particular, a person whose resources are at rock bottom will rationally take risky strategies even if she (and everyone else) can see that they are most likely to make her worse off financially, as long as those strategies offer a non-zero chance of becoming able to satisfy

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basic needs. No-one meeting their basic needs would ever rationally take such risks. The refined versions of the caution and desperation predictions are thus as follows:

> *Caution prediction'.* Individuals whose resources are only just adequate to meet their basic needs will show greater avoidance of risk, compared to those whose resources are abundant, and will decline some risks that would on average make them financially better off;
>
> *Desperation prediction'.* Individuals who are unable to meet their basic needs will accept greater risk, compared to those who can meet their basic needs, and accept some risks that will on average make them financially worse off.

These refined predictions help us understand why certain kinds of risky behaviour are more likely to occur in economic desperation; specifically, acquisitive crime, where the potential downsides are huge, and the potential gains are typically modest (though skewed), implying that returns are negative on average (Levitt & Venkatesh, 2000; MacCoun & Reuter, 1992; Wilson & Abrahamse, 1992). Moreover, in desperation, people may have little incentive to mitigate these risks by bundling them, as an affluent investor would do with a portfolio of shares. Rather, the large variance of a single risk act is exactly what they require (Stephens, 1981).

It is, then, no wonder that researchers are so tempted to see the risk attitudes of people in poverty as irrational, attributing them to insufficient cognitive bandwidth or cognitive biases. It seems a terrible idea to take options that are likely to make one worse off. However, the DTM claims that if one's utility function has a particular shape, this is in fact the rational thing to do. No cognitive limitations need to be invoked. The same observation goes for the risk aversion of people just above the threshold. For people in this position, the DTM claims that declining risks that have a good probability of making them financially better off is nonetheless the rational decision.

The DTM also makes a testable prediction about variation in risk taking. Assume the utility function underlying figure 2, and imagine that people's resources vary randomly over time by up to a few hundred units. For an individual with a baseline of 2000 units of resources, these fluctuations would make absolutely no difference to which risks they were or were not prepared to take. For an individual with a baseline of 0 resource units, they would make a vast difference: with a small disturbance to their resource levels, they would go from fairly extreme risk avoidance to fairly extreme risk seeking. Thus, the DTM predicts that

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individuals whose resources are scarce should show greater intra-person temporal variability in their risk-taking behaviour than individuals whose resources are abundant.

We can also state this prediction with regard to variation at the population level. Imagine that individuals vary a little in the exact position of their thresholds on the resource axis. For one person, +50 might be just above the threshold, but for another, +50 might be slightly below, because their needs and commitments are slightly different. If we are observing an affluent population all of whose resources are above 2000 units, this variation in threshold position has no consequences; such a population would be uniform in their risk behaviour. By contrast, a deprived population all of whose resources were +50 units would constitute a mixture of some people just above their thresholds and some people just below theirs. In such a population there would be a marked heterogeneity in risk taking. This leads to the *variation prediction:*

> *Variation prediction.* Populations in conditions of resource scarcity should show greater variation in risk taking than those in conditions of resource abundance, whether variation is defined within individuals over time, or between individuals.

### 2.4 Antecedents of the DTM

Versions of the DTM, or components of it, can be found in the literatures of several disciplines, but these have remained siloed. The core concepts of the DTM are the S-shaped utility function; and basic needs as causing a threshold around which there is a change in behaviour. The antecedent models posit one or the other of these concepts, and in a few cases both.

We start with economics. Micro-economic models generally assume that utility returns are always marginally diminishing, a postulate known as Gossen's first law (Gossen, 1854). However, there are exceptions. Friedman and Savage (1948) proposed a utility function with two inflection points, to explain why the same individual can sometimes both buy insurance and gamble. Their model predicts a mixture of risk taking and risk aversion, but not for reasons to do with basic needs. Rather, they predict maximal risk taking among people in the middle of the resource distribution. People in such a position were hypothesized to have strong incentives to move up into an elite, which they can only do through big gains.

Roy (1952) analysed the case of a portfolio manager trying not to maximize expected gain, but to minimize the risk of catastrophe (he cites 'death, bankruptcy, and a prison sentence' as

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examples, p. 433). He framed the problem as a step-like utility function. Roy's idea inspired DTM-like ideas in agricultural economics. Since Chayanov (1926), it had been commonplace to analyse peasant behaviour as aimed at guaranteeing a minimal harvest necessary for subsistence. The implications of this motivation for risk taking were formalised by multiple authors in the 1970s. Roumasset (1976) and Kunreuther & Wright (1974) proposed hierarchical goal models: the producer first tries to ensure that they do not fall below a 'disaster level', and only if sufficiently confident of succeeding, try to maximize profit. Masson (1974) represented this idea using utility functions with 'jump discontinuities'. These authors had both the S-shaped utility function, and a concept of basic needs. Thus, they recovered both the caution and the desperation predictions, with a stronger interest in the former.

DTM-like ideas also pervade the related field of development economics. Banerjee & Newman (1994) represented poverty as a lower bound on utility; proximity to this lower bound should push people to take desperate risks. Lybbert & Barrett (2007) analysed the effect of a poverty trap—a point below which one does not accumulate wealth—on risk taking. They derived both the caution prediction for people who have greater wealth than this, and the desperation prediction for people who do not have it. This literature has the S-shaped utility function, but makes a slightly different interpretation of the threshold: being below the threshold does not bring low utility *per se*, but rather triggers further impoverishment through the poverty trap.

Thus, in economics, there has been no shortage of models proposing jumps or S-shapes in utility functions. Whilst the caution prediction has been accepted as reasonable, it is striking how often the desperation prediction has been seen as implausible or irrelevant. In reviews of Roumasset (1976), Lundahl (1977) concluded that '[the desperation prediction] runs contrary to all conventional wisdom' and 'casts some doubt on Roumasset's methods' (p. 392), while Lipton (1977) argued that 'it is not clear how it withstands more usual, and in farming more plausible, assumptions' (p. 826). Lybert and Barrett (2007) noted that the desperation prediction had been unjustifiably marginalised by previous authors: 'stories of desperation-driven behavior are common in literature but largely absent from economists' explanations' (p. 416). In part, the reluctance to consider the desperation prediction may be because most economic analysis concerns cases where people are already assured of basic needs satisfaction ('[being below the threshold should be rare because…most people [in that position] would in fact not remain in farming and thus would not show up in the sample'

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(Masson, 1974, p. 562). Assuming that marginal returns always diminish is also analytically convenient. The assumption is necessary to produce unique equilibria in models of agents interacting in markets. Assuming everywhere-concave utility functions preferences may be a 'tractability trap' (Cherrier, 2023), i.e. a modelling choice made for tractability purposes that becomes entrenched in the field.

In biology, a clear ancestor of the DTM is the tradition of 'risk-sensitive foraging theory' (McNamara & Houston, 1992; Stephens, 1981). When starvation is imminent, animals should take any level of risk to gain food (desperation prediction), whereas once it has been averted for the time being, they should avoid too much risk (caution prediction). This idea diffused from animal behavioural ecology into evolutionary anthropology and evolutionary psychology (Kuznar, 2001; Mace & Houston, 1989; Mishra & Lalumière, 2010; Pietras & Hackenberg, 2001; Winterhalder et al., 1999). This literature makes no reference to the earlier agricultural economics sources, and uses different terminology. As the ideas diffused from animal biology into psychology, the notions of threshold and resources need became more general than starvation and caloric shortfall. Mishra & Lalumière (2010), for instance, defined need as 'a disparity between an individual's present state and a goal (or desired) state' (p. 605). The literatures inspired by risk-sensitive foraging theory have been dominated by efforts to test the desperation prediction, since this has been taken to be the distinctive claim of the approach (Frey et al., 2021; Kacelnik & Bateson, 1996).

Finally, from sociology, we note some resemblances between the DTM and strain theory (Merton, 1938). The two approaches are hard to compare closely, since strain theory is a qualitative framework rather than an explicit model. Moreover, strain theory considers behavioural options in terms of their correspondence to local normative expectations, rather than their degree of risk as variance. Nonetheless there are parallels. People are assumed to have highly valued goal states (akin to basic needs). When they can successfully meet these goals using expected, legitimate means, they will do so (akin to the caution prediction). When they are falling short of meeting these goals through expected, legitimate meets, they are more likely to turn to illegitimate and unexpected means of getting to the same end, such as crime, despite the potentially large costs of doing so (desperation prediction).

In summary, each of the core components of the DTM, as well as both the caution and desperation prediction, can be found in multiple literatures. These literatures differ in their

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degree of formalisation; in the scope of the phenomena to which the model applies; and in the exact conceptualisation of basic needs. Yet, they clearly articulate very similar basic ideas.

### 2.5 Relationship to psychological theories

The DTM may call to mind two other bodies of work: Prospect Theory (Kahneman & Tversky, 1979), and scarcity theory (Mani et al., 2013; Mullanaithan & Shafir, 2013; Shah et al., 2012). The former features an S-shaped value function; whilst the latter concerns patterns of decision making under conditions of poverty. However, the DTM is a different kind of theory from either of these, making different predictions and offering a different type of explanation. This section reviews the resemblances and differences.

Prospect Theory and scarcity theory both place central emphasis on how the mind departs from perfect rationality. In Prospect Theory, people apply an asymmetric valuation to outcomes depending on whether they are losses or gains relative to the status quo (the 'value function'); and they overweight small probabilities whilst underweighting large ones (the 'probability weighting function'). These are cognitive biases. Scarcity theory holds cognitive capacity to be limited. *Ex hypothesi*, conditions of scarcity such as poverty use some of it up by inducing cognitive load. This reduces available cognitive resources and executive control for making decisions. Thus, both approaches aim to account for departures of decision making from rationality as defined by maximization of expected utility; and do so by invoking either biases or constraints in available cognitive capacity.

The DTM, by contrast, is just the application of expected utility maximization to the case of an S-shaped utility function. Thus, the DTM explains patterns of desperate risk taking or extreme risk aversion as the strategies that people have rational incentives to adopt. They should adopt them, the DTM contends, even if they had infinite cognitive capacity and perfectly unbiased appraisals of the world. We do not deny that minds often depart from perfect rationality and unbiased perception; clearly this is the case. It is just that the DTM does not depend on such cognitive constraints and biases. We see such rational-choice explanations as having a kind of parsimony: if we can explain behaviour as an in-the-main rational response to experienced situations, we do not need to invoke any claims about the biases or limitations of psychological mechanisms. The DTM is formulated in a way that is agnostic about the detail of the cognitive processes involved (though see section 6.1).

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Neither Prospect Theory nor scarcity theory make the DTM's signature predictions. Prospect Theory has been taken to predict that the same risky prospect will be evaluated differently according to whether the outcomes represent gains or losses relative to the status quo. The DTM's predictions concern resource levels relative to actual material need, not the status quo (see Houston et al., 2014). We have already discussed evidence that the S-shaped valuation pattern people assign to different incomes is not entirely determined by whether those incomes represent losses or gains compared to what they currently have (Nettle & Wolff, 2025; 2.2). Mishra et al. (2012) designed experiments in which the predictions of the DTM and Prospect Theory could be tested simultaneously. Participants chose between risky and riskless options to gain resources. There were two cross-factored independent variables: participants currently had (or did not have) a minimum level of resources that they needed; and the options were framed in terms of losses (or gains). The results showed both DTM and Prospect Theory effects. People chose risk more often when they were going to fall short of what they needed (the DTM's desperation prediction). They were also, collapsing across positions relative to need, more likely to choose risk when the framing was in terms of losses than gains (the Prospect Theory prediction). The need-based effect size was however considerably larger (see their figures 1 and 3; also Zeisberger (2022)).

As for scarcity theory, it suggests that people experiencing poverty will have less available cognitive capacity, but makes no clear prediction about the effect of this capacity limitation on decisions under risk. Shah et al (2012, p. 684) suggested that it 'might lead people to [...] make riskier financial decisions', whereas later reviews describe the prediction of scarcity theory as the opposite (de Bruijn & Antonides, 2022; Schilbach et al., 2016). Empirically, the evidence on the impact of induced cognitive load on risky decisions is mixed, with findings in both directions, as well as null findings (Dalton et al., 2020; de Bruijn & Antonides, 2022; Deck & Jahedi, 2015; Zhao et al., 2025). To summarise, the DTM is not subsumable within either Prospect Theory, or scarcity theory.

## 3. Empirical evidence

In this section, we review the empirical evidence relevant to the testing the DTM's predictions (rather than validating its assumptions, see 2.2). Our review is not systematic, since the literature is too diverse to be captured with any single set of search terms. Space precludes a detailed narrative discussion of each study. Instead, we provide synoptic

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overviews of the kinds of evidence that exist (supported by summary tables where appropriate), and refer readers to the original sources.

We included studies when at least one of the following conditions was met. The study:

- Includes a measure of risky choice for people in a low resource situation (desperation prediction) *and* for people in an adequate resource situation (caution prediction);
- Includes a measure of risky choice in a group likely not to meet basic needs, or having experienced a negative shock (desperation prediction), compared to some comparison group;
- Tests for a non-linear relationship between risky choice and resource levels (desperation and caution predictions combined);
- Tests for greater variation in risky choice amongst individuals with insufficient vs. sufficient resources (variation prediction).

These conditions mean that we have not included studies showing that people are risk averse in general. Nor have we included studies testing for a linear relationship between risk aversion and economic resources (such studies are numerous, both of large datasets from mostly high-income countries (Dohmen et al., 2011; Donkers et al., 2001; Guiso & Paiella, 2008) and smaller samples from rural subsistence contexts (Miyata, 2003; Wik et al., 2004)). We have also not covered the diverse literatures testing versions of the DTM beyond humans: in birds (Kacelnik & Bateson, 1996; Kacelnik & El Mouden, 2013), bees (Cartar, 1991), and even plants (Dener et al., 2016).

We classify the sources of evidence into four major groups, which vary on the two dimensions of causal identification and external validity (figure 4). Laboratory experiments are high in causal identification and low in external validity (section 3.1); observational studies of artificial lottery choices are low in both (section 3.2); observational studies of real-world decisions are low in causal identification but high in external validity (section 3.3); and natural experiments are (fairly) high in both causal identification and external validity (section 3.4). This typology over-simplifies. For example, some of the natural experiment studies (3.4) use artificial lottery choices, but we place them in their own quadrant because of their stronger causal design. Each type of study has a different role in the tapestry of support for the model, as we emphasize in the separate sections.

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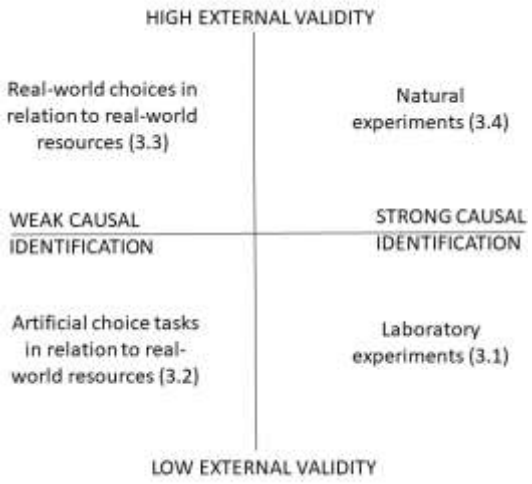



**Figure 4.** Organising classification for the sources of evidence reviewed in section 3. Parenthetical numbers refer to the subsections.

### 3.1 Laboratory experiments

We identified nine papers, most with several studies, directly testing DTM predictions in experimental settings. We describe the individual studies in table S1 in the Supporting Information (see also associated notes). This literature began when researchers wondered whether ideas about risk-sensitive foraging in animals were relevant to humans (Pietras & Hackenberg, 2001; Rode et al., 1999). The strength of the experimental approach is explicit control of needs and the likelihood of meeting them. The researcher creates an explicit currency such as points or cents, and defines a minimum threshold level the participant needs, for example to continue in the experiment or obtain a bonus at the end. The participant has a number of behavioural options that vary in risk. Without exception the experiments find that people are more likely to take a risky option when they are failing or can anticipate failing to meet the need threshold (desperation prediction). They generally prefer safer options as long as they can, or are on track to, meet their needs (caution prediction). Most experiments show switching from risk avoidance to risk taking within subjects, thus ruling out explanations in terms of stable dispositions. The effect sizes for the strategy switching depending on position relative to the threshold are substantial.

Most of the studies involve impersonal ‘games against nature’, but a subset introduces a social element. In Pietras et al. (2006), the less risky option was to share resources with

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another participant. In Radkani et al. (2023), the riskiest option was to steal points from other participants, with the possibility of being caught and fined. Thus, the results were a test of the DTM's ability to explain desperation-driven negative social behaviours, such as crime or the breakdown of cooperation.

Whilst the results of the experimental studies are unanimous, the obvious limitations concern external validity. The experiments demonstrate that people are able to adjust their decisions as the DTM predicts when they are given, in a contrived scenario, an explicit need threshold and a set of well-defined choices differing in risk. This is not the same as showing that their decisions outside the laboratory are driven by those same principles. Nonetheless, it is impressive how clearly, consistently and accurately the participants adjust their risk taking to their probability of meeting their need threshold.

### 3.2 Artificial choice tasks in relation to real-world resources

This section concerns observational studies that use participants' real-world resource levels (e.g. income or wealth) to predict their choices on artificial dilemmas involving risk. We identified 8 such studies, which we describe in table S2. Most of the studies explicitly cite one or the other of the antecedent versions of the DTM as their motivating theoretical framework, though others proceed descriptively without a priori theoretical prediction (Barsky et al., 1997).

The populations studied range from farmers and herders for whom starvation is a serious possibility, through to people in contemporary France, the UK and USA, where this is presumably not the case. Some of the studies defined the needs threshold *a priori*. For example, Caballero (2010) calculated what income would be needed in Bogota to avoid malnourishment. Others used the data to identify an inflection point, for example by using curvilinear or broken-stick regression. Most studies used objective measurements of material resources, but some used subjective appraisals of resource adequacy in addition or instead (de Courson et al., 2025; Tucker, 2012). The dilemmas constituting the outcome variable were typically choices between lotteries, such as 'Would you prefer $100 for certain, or a 50% chance of getting zero and a 50% chance of getting $200?'. The currency of the payoffs and the size of the stakes varied. In some studies, the lotteries were paid out; in others, hypothetical.

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The studies all found some evidence for the desperation prediction: increased risk taking at the very bottom of the resource distribution, or in some subgroup we can reasonably characterize as failing or likely to fail to meet their basic needs (e.g. the food insecure). In most cases this was coupled with risk aversion in people slightly higher but not very high in resources (caution prediction), producing U-shaped relationships between risk taking and resources overall. One study (de Courson et al., 2025) also tested the variation prediction, finding greater variability in risk taking at the bottom end of the income distribution in the UK and France.

Though the predictor variable in these studies is ecologically valid, the outcome variable is not spontaneous everyday decision-making. Moreover, where the dilemmas were incentivized, the stakes were necessarily small or moderate (up to a few days' wages). The studies that made the stakes large enough to have life-changing consequences used, unsurprisingly, hypothetical incentives. Kahneman & Tversky (1979, p. 265) defend the use of hypothetical dilemmas for such problems, given the ethical and practical impossibility of making such stakes real, and on the basis that it is reasonable to assume that people know how they would behave, and have no special reason to disguise their inclinations. Holt & Laury (2002) showed that choices in incentivized and hypothetical risk dilemmas follow a similar pattern, although as the stakes increase, people become more risk averse for the incentivized case than the hypothetical one.

### 3.3 Real-world choices in relation to real-world resources

In this section, we review a small number of studies of how subsistence decisions vary in relation to resource levels (income or wealth) in farmers and herders. These studies have the great strength that both the predictor variable and the outcome variable are non-artificial; and the stakes are high. The researchers were still able to characterize accurately the risk profile of the different subsistence options, using production or price data. On the other hand, these are necessarily observational studies, and so inferences about causality are more cautious than the experiments in 3.1, even though the ecological validity is much higher.

Kunreuther & Wright (1974) examined the behaviour of farmers in 20th century Bangladesh and the 19th century US South. In both cases, the farmers had to choose between a consumption crop (rice/corn) and a crop for cash sale (jute/cotton). Those choosing the cash crop would mostly use the cash to buy the consumption crop at market. Producing the cash crop was riskier due to the vagaries of market prices: the year-to-year standard deviation in

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the amount of food a farmer could end up with was 2-3 times higher (Bangladesh) or 4-5 times higher (US South) if they chose to plant the cash crop. On the other hand, the mean amount was also often higher. In both locations, those with large farms planted a greater proportion of their fields with cash crops than those with moderate-sized farms (caution prediction). However, among the very smallest farms, the trend reversed, and the farmers went for a high proportion of cash crops. Kunreuther & Wright interpreted this as evidence for the desperation prediction: 'the farmer… prefers to gamble to avoid poverty' (p. 3).

Mace (1990) studied the choice by African herders to keep sheep and goats versus camels. Camels can better tolerate drought conditions, and hence are less risky, but are less profitable. In a DTM-style theoretical model, Mace & Houston (1989) had shown that very poor households should ideally keep risky sheep and goats, to get their herds to a critical size as quickly as possible. Above this size, they should switch mainly to safer camels. These predictions were clearly supported in three groups studied, and ambiguous in a fourth: households with a small herd kept exclusively sheep and goats, whilst households with large herds kept mostly camels.

### 3.4 Natural experiments

This section deals with studies where there is some shock to, or exogenous driver of, changes in (real-world) resource levels. The random nature of the shock allows for more confident causal inference than other observational studies. Thus, the strength of these studies is that many third-variable and reverse causality explanations can be ruled out, though they have other interpretive problems, as we will see. There are two kinds of relevant study: resource shock studies, and resource cycle studies.

Resource shock studies examine the consequences of exposure to natural disasters or civil upheaval for risk taking, usually measured with artificial risk dilemmas. These studies find sometimes that exposure increases risk taking (Eckel et al., 2009; Hanaoka et al., 2018; Kettlewell, 2019; Page et al., 2014), and sometimes that it decreases it (Callen et al., 2014; Cassar et al., 2017). This mixture could be consistent with the DTM's predictions: whether risk taking would be predicted to increase or decrease would depend on where in relation to the needs threshold the shock had left people. However, this does cause something of an epistemological problem: if a result in either direction would support the DTM, how could the DTM ever be falsified in this literature? This is exacerbated by the fact that it is often not clear how individuals' resource levels have been affected by the shock. The researchers are

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typically more interested in the psychological effect of exposure to the shock itself, rather than as an instrumental variable affecting resource levels. A partial exception is Page et al. (2014), who studied an Australian flood. They examined risk taking by homeowners with large property losses compared to neighbours whose houses happened to be a little way above the waterline, and hence were exposed to the flood but with no personal loss. The homeowners with losses took more risk in a gambling task, and the worse the losses, the more likely they were to choose the risky options.

Resource cycle studies use exogenous temporal variation in resource levels to identify their causal impact. The classic example is the welfare check cycle: in jurisdictions where welfare payments are made around the 1st of the month, the day of the calendar month serves as an instrumental variable for people's current resource levels. Foley (2011) found that acquisitive crimes in US cities follow 'welfare payment cycles', with an increase in the rates over the course of the month as welfare payments run out. Akesaka et al. (2023) studied artificial risk dilemmas in American and Japanese participants who depended on a monthly payout. In both cases, risk taking increased in the period leading to the pay day. This is consistent with the desperation prediction, assuming that failing to meet basic needs becomes more common as resources run out. However, an oddity of these results is that the gambles had lifetime consequences and extremely large stakes. If the actual resource shortfall was a minor one that people knew would only last a few days, it is not clear why, under strict rationality, preferences for long-term decisions ought to change. The best interpretation here is that falling short of a need level induces a risk-taking mindset, which then gets applied both to decisions that are strategically appropriate to solving the problem, and to decisions that are not. We note also that Carvalho et al. (2016) found no difference in lottery risk taking before versus after payday in two panels of relatively low-income US adults.

### 3.5 Summary of section 3

Section 3 has reviewed a range of evidence testing the DTM's predictions empirically. Across many countries, many levels of societal affluence, and using several methods, we do indeed observe a combination of increased risk taking when resources are extremely low (desperation prediction), and greatest risk aversion when resources are adequate but not abundant (caution prediction). A sceptic might argue that all this evidence does is reproduce the observation with which we began section 1: that poverty is associated both with risk taking and risk avoidance. At the very least, section 3 shows that this pattern is very general,

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and shows up in a wide variety of ways. This is important. However, we believe that the evidence discussed supports the DTM in a stronger sense. The DTM claims that that the *reason* for the shift from greater risk aversion to greater risk taking in some situations of poverty is to do with meeting basic needs. Aspects of the evidence also support this explanation. In experiments, when an explicit need threshold is imposed by the researcher (section 3.1) it is the inability to meet this that causes the transition in risk behaviour. In observational studies, it is need-related measures such as caloric inadequacy or food insecurity that most clearly correlate to increases in risk taking (section 3.2). Thus, we argue, the DTM not only captures a widespread empirical pattern, but sheds light on why the pattern arises.

## 4. Population implications

The DTM is a model of individual decision making, but it can be used to predict and interpret patterns at the levels of populations and societies. Thus, it has potential to contribute to solving the 'micro-macro' problem in social science, the challenge of linking individual-level actions and decisions to broader societal patterns (Coleman, 1990; Epstein, 2012). Inference between the DTM and population-level patterns is potentially bidirectional. On the one hand, one can assume the DTM is true at the individual level in order to make predictions about regularities at the societal level (de Courson & Nettle, 2021; see 4.1). On the other hand, patterns observed at the societal level can provide evidence that the DTM is a realistic model of how the individuals in those societies are making decisions (see 4.2). This may seem rather circular: we assume that the DTM is true in order to understand macro-patterns, and use macro-patterns as evidence that the DTM is true. In fact, this is just an example of 'inference to the best explanation' (P. Lipton, 2004). The more varied the phenomena that turn out to be concordant with the DTM, the stronger the case that it is a useful idealization.

### 4.1 Explaining associations between inequality and aggregate outcomes

Several studies have detected correlations, across cities, countries or states, between the inequality of the income or wealth distribution (as measured with the Gini index), and aggregate outcome variables including crime rate and social trust (Barone & Mocetti, 2016; Kelly, 2000; Rufrancos et al., 2013; Wilkinson & Pickett, 2009). Such associations produce considerable debate about causality (Daly, 2023; Lynch et al., 2004; Nettle & Dickins, 2022; Vilalta et al., 2024). Since the Gini index is an abstract population statistic of which most

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people are usually unaware, further explanation is needed of how it could affect their appraisals or decisions.

One simple way that inequality could affect aggregate outcomes is if the mapping between resources and behaviour at the individual level is non-linear. For example, imagine that the probability of committing an acquisitive crime rises sharply when individuals have less than $1000, and is a flat line for all incomes greater than that. If the income distribution is made more unequal (keeping its mean in the same place), then more people than before will have less than $1000, and their probability of committing crimes will go up. There will also be people who have got richer by a corresponding amount, but their probability of committing crimes won't go down, because the resources-crime function is flat at the higher end. So, the people who are made worse off will commit more crimes, and the people who are made better off will not commit any fewer. The total amount of crime goes up. This is known as a concavity effect (Gravelle, 1998). Because the DTM predicts a non-linear mapping between individual resources and risky decisions, it implies that concavity effects will often occur for behavioural outcomes related to risk. These follow by mathematical necessity; they do not rely on individuals having any particular attitude to inequality per se, or even perceiving it. Thus, the DTM offers a somewhat deflationary explanation of crime-inequality associations at the aggregate level. It is helpful to distinguish between *primary* effects of concavity, and *secondary* effects, which are due to people responding to the primary effects. De Courson et al. (2023) argued that greater acquisitive crime is a primary effect of increasing inequality: it is committed mainly by the individuals who find themselves below the threshold. Decreased social trust, and increased violent crime, may be secondary effects. Non-desperate people find themselves in a population in which desperate others try to steal from them. Hence, they trust less; and they may also need to use violence as a toughness signal, to avoid being the target. Secondary effects, unlike primary effects, are not restricted to individuals who are below the desperation threshold.

If associations between inequality and aggregate outcomes are driven by concavity effects and their secondary consequences, then there is a sense in which inequality is not the real causal variable. The real causal variable is the fraction of people who are below the threshold (de Courson & Nettle, 2021). Across many scenarios, the Gini and the fraction of people who are below the basic needs threshold are strongly correlated. However, there are conceivable scenarios in which the two are decoupled. For example, the DTM predicts that in a society so rich or so institutionally protected that every individual's basic needs were always met, the

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Gini coefficient should cease to predict aggregate outcomes. A second hypothetical scenario is that in a society where almost everyone's resources were below the threshold, the DTM predicts that increasing inequality could *improve* aggregate outcomes. This would be because broadening the dispersion would put some individuals into above-threshold positions, whilst the bulk of people, already being below the threshold, cannot be made much worse off than they already are.

### 4.2 Impact of welfare states on risky behaviours

Economically advanced countries have welfare states that function to boost low incomes, and prevent them ever becoming critically low. In principle, in a perfectly effective welfare state, there would be no fear of falling below the basic needs threshold, and zero incidence of actually doing so. This means we should not observe either the extreme caution characteristic of people just above, nor the desperate risk taking of people below, in a society with such a system.

A few cross-national studies have examined the effect of welfare provision on risk taking. Bird (2001) showed that where there is a more generous welfare provision, people take on economic activities with more variable income streams, such as entrepreneurship. Likewise, Iversen & Soskice (2001) found that in countries where people take on more training for highly specialised trades, there is higher public support for welfare provision. The researchers argue that trade specialisation is a risky investment, so where it is common, people want insurance against the downsides. The direction of causality cannot be unambiguously identified in these studies: it could be that where people's incomes are more variable, they vote for welfare expansion; or where there is good welfare, they take on risky jobs. Schroyen & Aarbu (2018) compared risky choices, measured using artificial risk dilemmas, across six countries. People in countries with more extensive welfare provision chose more risky options. In DTM terms, this can be interpreted as a reduction in above-threshold caution that comes from knowledge that there is an effective safety net.

If the welfare state effectively prevents failure to satisfy basic needs, then better welfare prediction should reduce crime. The hypothesis that welfare provision suppresses crime is over 125 years old, with Franz von Liszt describing social policy as 'the best and most effective crime policy' in 1898 (cited in Rudolph & Starke, 2020). Rudolph & Starke (2020) reviewed 41 cross-national studies testing the hypothesis that more generous welfare provision is associated with lower crime rates. Thirty-two studies, plus the original study they

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present, found support for the hypothesis. In their own data, the strongest welfare-provision predictor of a lower crime rate (operationalised as homicide rate) was the generosity of unemployment insurance. They argue that unemployment insurance insulates people from the extreme strain of loss of livelihood. Relatedly, Calnitsky & Gonalons-Pons (2021) found that, in an experimental trial of a guaranteed basic income scheme (the Manitoba Basic Annual Income Experiment), the intervention reduced both property crime and violent crime.

In summary, correlates of more generous welfare provision appear to include both increased taking of risks such as choice of profession that we assume to carry positive-on-average financial returns); and decreased taking of risks such as acquisitive crime likely to have negative-on-average returns. The DTM provides micro-foundations through which these two seemingly contrary effects could both occur. The positive effects of better welfare institutions on risk judgments has been used as a central pragmatic argument for investing in more generous and universal welfare systems (Johnson et al., 2025).

### 4.3 Deterrence of crime

Since Cesare Beccharia and Jeremy Bentham, one of the main justifications for the penal system has been that fear of punishment should deter crime. Implicitly, this argument is based on expected utility: if individuals balance costs and benefits, authorities could prevent crime by imposing sanctions harsh enough to make the payoff negative on average (Becker, 1968). Making the punishment more severe may be easier and cheaper than increasing the probability of punishment, and should have the same effect (since expected utility is the product of probability and magnitude). However, in empirical studies, there is little evidence that increasing punishment severity has a negative effect on crime rates, while increasing the probability of sanction does (Dölling et al., 2009; Nagin, 2013).

The DTM can potentially explain why increasing severity is apparently not deterrent for acquisitive crimes (whilst improving welfare provision is, see 4.2). A formal DTM model by de Courson & Nettle (2021) predicted that increasing punishment severity beyond a minimal level would not reduce property crime, whilst increasing punishment probability had more influence. This was because property crime (under the assumptions of the model) would only be committed by people close to rock bottom anyway. Their behaviour is conditioned by the probability of moving back up above the threshold, rather than the magnitude of further potential loss. The model even predicted some circumstances in which more severe punishment could make property crime *more* prevalent: very severe punishments can push

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marginally desperate individuals even further away from the threshold point, hence motivating subsequent crime; indeed leaving them with no other recourse. This prediction - of increasing punishment severity sometimes being not just ineffective but counterproductive - was made independently in a theoretical paper using similar assumptions (MacLeod, 2023). A corollary of the DTM is that people at different points on the S-curve require different magnitudes of potential punishment in order for punishment to be deterrent, because they have different risk premiums (section 2.3, figure 3). Someone just above the threshold is not hard to deter from taking a risk. Someone at rock bottom is almost undeterrable.

## 5. Critical issues

We have thus far left some important conceptual and epistemological issues unaddressed. Resolving these is important for identifying the predictions of the model more precisely, and ascertaining its scientific value.

### 5.1 Is the threshold a subjective or objective construct?

Should the input variable to the DTM - the level of resources - be operationalised in objective material terms (e.g. a number of dollars or calories) or subjective psychological ones (e.g. a feeling of basic needs being met)? Our answer to this question is both. The subjective feeling that needs are, or are not, being met should be a strong proximal determinant of risk orientation. However, we would expect objective resource availability, in turn, to influence these subjective feelings.

Hence, the DTM is relevant to people who want to study the consequences of changes in objective economic resources and their distribution. However, the effect of changing material resources should be mediated by changes in appraisals and subjective states. In a straightforward comparison, the subjective variables should often be the stronger predictors, for several reasons. They are closer in the causal chain. They capture details of individuals' situations—the magnitude of their needs, local costs, available social support—that simple income numbers do not. People are presumably good at taking a 'read 'of their situation that integrates the features of their personal situation. Empirically, subjective appraisal variables outperform objective indicators as predictors in many domains (Idler & Benyamini, 1997; Kaiser & Oswald, 2022). In the DTM context, de Courson et al. (2025) used both a subjective resource adequacy measure and an objective measure of household income to predict risky

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choice. The hallmark DTM pattern of risk avoidance at low resource levels, and risk taking at very low resource levels, was more clearly supported with the subjective appraisal measure.

### 5.2 Is the threshold level absolute or relative?

Another question is whether the threshold level is absolute or relative, that is, to what extent its position depends on others' levels of resources, or what one currently has. Both perspectives are defensible. Hunger does not intrinsically depend on what other people have to eat or whether one was hungry yesterday. On the other hand, what is considered a basic need clearly varies over time and space, depending on what it is normal to have in a society: as Marx (1849) observed,'let there arise next to the little house a palace, and the little house shrinks to a hut' (p. 16). We leave this question somewhat open, but we are unattracted by either extreme position. A purely absolute conception of threshold level is clearly problematic. The threshold of desperation is a level of material resources that allows people to satisfy the basic needs constituted *both* by their physiology (which are largely absolute), and by the expectations and social roles available in the broader society (which must have a relative component). We have already mentioned (2.2) Adam Smith's observation that necessities include whatever it is "indecent for creditable people to be without". This is necessarily society-relative.

On the other hand, if the position of the threshold were *purely* relative, then uniform increase in society's wealth would have no impact on the prevalence of desperation: need thresholds would move in exact lockstep (as suggested by Rayo & Becker, 2007). This does not appear to be the case: when people's incomes increase, their conception of how much is needed for a good life increases too, but not nearly as fast (Castro & Bleys, 2023; Nettle & Wolff, 2025). Thus, the prevalence of desperation can decline with economic development and institutional change. Accordingly, there have been large historical declines in important risk-related behaviours, such as violence, as societies have become more affluent (Baumard, 2019; Pinker, 2011; Thome, 2007).

### 5.3 Is the DTM falsifiable?

In many datasets, it is hard to know a priori where on the resource scale the cliff and the rock bottom are located. This makes the DTM able to accommodate a variety of results without being clearly falsified. If the observed association between resources and risk taking is linear and negative, we could conclude that the DTM is supported, but there are no desperate

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individuals in the sample. If the association is U-shaped, we would definitely conclude that the DTM is supported. There can also be an apparent circularity: we identify those individuals who are below the threshold because they take risks, and also *explain* that risk taking by the fact they are below the threshold. Thus, the model could be accused of being so permissive and hermetic that it is essentially unfalsifiable with data.

We defend the DTM against this charge. In general, middle-range theories are not falsifiable by any individual study (Ketelaar & Ellis, 2000). Rather, they are justified by their ability to create clear predictions and new understanding across a range of different studies. More concretely, the falsifiability criticism above applies mainly to observational studies relating some measure of objective resources to some measure of risk taking. Even for these studies, there are many patterns that would falsify DTM predictions, for example no association; or an inverted U-shape with the highest risk taking in the middle of the resource distribution. More importantly, studies of this type form only one part of the evidence (section 3). Studies that use subjective appraisals make stronger predictions: a switch to risk taking around the point where the participants feel unable to meet their basic needs. The experimental studies are also important, despite the ecological validity concerns, because the predictions are unambiguous and the causality clear.

### 5.4 What is the scope of the model?

We have presented the DTM as a model concerning the relationship between individual material resources (in the form, typically, of money) and the taking or avoiding of risk in decisions that have material payoffs. One can, however, imagine analogous arguments where the resource variable is something else: for example, social connection, status, or reputation (see Duclos et al., 2013 for an example). Someone who currently enjoys just-adequate status might take care not to offend anyone with what they say; whereas someone who feels socially abject may boldly seek arguments on the basis that they have nothing to lose reputationally. The analogy would hold as long as one could speak meaningfully of basic needs in that sphere, that are not fully divisible, and as long as there are strategies that produce gains or losses in that currency and carry different degrees of risk. Are these broader applications instances of the DTM, or analogies to it? Do they come within the scope of the model?

The DTM we present here is a narrower one, where the input variable is material resources and the output variable is decisions involving risk on the dimension of material resources. All the arguments we marshal are relevant to this version. This is not to discourage people from

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making broader generalisations: there might be other domains where the analogy proves fruitful. We merely note that we are not here arguing the case for, or evidencing, broader or more abstract applications.

## 6. Opportunities for future DTM research

In this final, non-exhaustive section, we outline priority areas for the growth of future research inspired by the DTM.

### 6.1 Psychological instantiation

The DTM is a theory at the behavioural level that assumes people maximise expected utility under an S-shaped utility function. Maximisation of expected utility, and the utility function itself, are idealisations allowing the theory to be specified and its predictions determined. We do not necessarily claim that humans actually have a single cognitive mechanism called the utility calculator or that it contains an S-shaped representation (still less that people are consciously aware of their expected utility or deliberate explicitly about it). All we claim in terms of instantiation is that there must be a set of cognitive processes that deliver approximately the predicted behaviour. We are agnostic about what these processes are. This section is an invitation to researchers to investigate them.

The minimum abstract requirement for an account of the psychological instantiation involves:

1. a mechanism for representing what basic needs are and how much resource is required to meet them;
2. a mechanism for tracking whether they can currently be met;
3. a governor of risk-related decisions that can be adjusted by the tracker.

There are a number of resources in the literature that might serve as points of departure for investigating these mechanisms. The first is the literature on mental accounting (Thaler, 1999) or mental budgeting (Heath & Soll, 1996), relevant to 1 and 2 above. Rather than seeing their material resources as one pot, people form separate mental accounts (one for food, one for lodging, etc.) with implicit or explicit budgets allocated to each. They track accumulated expenditure and further need for expenditure within each account, over a characteristic time cycle. This literature has been mainly concerned with departures from ideal rationality caused by mental accounts being separate (Skwara, 2023). However, we believe the approach has

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promise for how people deliver approximately rational behaviour without explicit expected utility calculation.

The granularity of mental accounts is not completely understood (Skwara, 2023; Zhang & Sussman, 2018). Researchers have distinguished 'utilitarian' from 'hedonic' categories; the former appears to correspond to basic needs. However, each basic need may be represented as a separate account rather than aggregated. People become more averse to further expenditure in the account as they approach and reach the mentally allocated budget (Soster et al., 2014). They reallocate resources from some mental accounts to others, but not symmetrically: for example, resources can flow from their luxuries mental account to their food mental account, but not in the other direction (Gou et al., 2013). This suggests that some accounts are cognitively protected, whilst others are elastic. The point at which elastic mental budgets are all exhausted, and yet the resource remaining in inelastic ones is insufficient for the anticipated needs, presumably produces a cognitive or affective signal.

As for item 3, the governor of risk taking or aversion, several literatures provide potential resources. One is regulatory focus theory (Higgins, 1997), which identifies promotion motives focused on gaining something, and prevention motives focused on avoiding loss. Each focus can be cued by specific situational variables, and produces characteristic patterns of risk taking (Scholer et al., 2010). Another relevant area is research on stress or affect in relation to decision making. Stress can enhance the salience of reward, leading to a stronger lure of the potentially rewarding outcomes of risky actions relative to the potentially negative ones (Mather & Lighthall, 2012). Through this effect, stress manipulations increase risk taking, especially for negative-expected-return risks (Starcke & Brand, 2016). Affect manipulations can also change risky choice; though the two main theories in this area make directionally opposite claims about whether negative affect induces greater risk taking and positive affect greater risk aversion, or the opposite (see Conte et al., 2018). Simple valence of affect may not be a sufficiently fine categorisation to identify the direction of affect-driven shifts in risk (Raghunathan & Pham, 1999), or associations may be U-shaped (note also null findings in this area, Treffers et al., 2016).

In sum, the psychological mechanisms delivering DTM behaviour are not yet well understood, and we do not endorse any particular account of them. Yet, detailing these proximal processes is interesting in its own right, as well as potentially further grounding and refining the model.

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### 6.2 Material resources and prosociality

There is a lively debate about the relationship between socioeconomic position and variables related to prosociality. This debate is framed by two positions, each intuitively compelling, just as in the case for the relationship between poverty and risk taking (section 1).

The 'risk management' perspective argues for increased prosociality among people experiencing lower socioeconomic position (Piff et al., 2010). People in such positions face increased likelihood of grave shortfall. They rely on informal social networks to buffer against these dangers. Because of the importance of maintaining these networks, they are argued to exhibit greater generosity, greater ethicality and more interdependent world views (Kraus et al., 2012; Piff et al., 2010), supported by greater interpersonal attunement and empathic accuracy (at least in men: Brener et al., 2024; Dietze & Knowles, 2021; Engstrom & Laurin, 2024; Stellar et al., 2012). On this view, low levels of resources enhance prosociality and social connection, because people rely on one another to cope with their situations.

The 'resource constraint' perspective points out that people in lower socioeconomic positions may lack the resources to prioritise others' needs (Korndörfer et al., 2015). Thus, they are less generous in sharing resources (Korndörfer et al., 2015), trust less (Alesina & La Ferrara, 2002; Delhey & Newton, 2003), have smaller social networks (Groenou & Tilburg, 2003) and are more likely to be lonely (Davis et al., 2025). On this view, low levels of material resources can undermine sociality because people do not have the discretionary resources to sustain relationships, and indeed may have urgent incentives to break them.

The current debate as framed in terms of deciding which of the two perspectives is true. For the record, the resource constraint perspective seems more often to be confirmed (Wu et al., 2025), though associations are small and very heterogeneous, and there are also many null associations (Batruch et al., 2025). However, for risk and resources, the DTM provides an account of how two apparently opposing perspectives can *both* be true, in slightly different circumstances. Something similar may occur with prosociality. One recent study identified a cluster of people on low incomes who were more socially interdependent than average; and another group on even lower incomes who were less socially interdependent than average (Fendinger et al., 2023).

The DTM offers the following potential insights for this area of enquiry. Low material resources indeed make maintaining good social relationships more valuable, because people draw on these to buffer basic needs shortfalls (Kaufmann & Lindauer, 1986; Wolff et al.,

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2025). This particularly applies to people currently above the threshold who wish to insure themselves against falling below. Low material resources also make cheating and defection more valuable and tempting. This is particularly true for people who have already fallen below the threshold. Thus, the net effect of poverty on prosociality may well depend: on the positions of the people involved in relation to the threshold; on the turnover of people in the network; on the temporal volatility of individuals' resources; and on the correlation of resource levels or fluctuations across individuals. The DTM could be used to create formal models in this area, which might lead to more precise predictions than the generalisation that more resources are always associated with either more or less prosociality.

The variation prediction of the DTM also suggests also that the social behaviour of people in poverty may simply be more unpredictable: sometimes they are just above the threshold, in which case they may seek and offer social support, and sometimes they are just below, in which case they may have to put their relationships at risk due to pressing need. This could explain the findings that people in poverty are more socially attuned and empathically accurate, and yet also trust one another less. High attunement to others without necessarily feeling those others can be trusted is a comprehensible response to the behaviour of others being less predictable, as the DTM suggests could be the case around the threshold. Thus, we believe that the DTM could enrich theorizing and aid in the interpretation of findings in the area of material resources and prosociality.

### 6.3 Sociopolitical implications

The previous section suggested research opportunities linking the DTM to individual social behaviour. This section discusses possible further applications to societal-level patterns. Societies generate 'moral orders', sets of shared expectations about what roles and resources different people will be entitled to. These orders can be very stable. A long-standing puzzle in social science is the fact that people who are relatively disadvantaged by such orders often nonetheless comply with them, justify them, and resist change (Jost et al., 2004; Morin, 2022). On the other hand, such orders can collapse or be overthrown quite rapidly. Predicting such episodes of upheaval is difficult, and is the topic of longstanding enquiry(Gurr, 1970; Turchin et al., 2017).

The DTM may shed some light on the combination of frequent compliance and occasional rebellion. If a moral order provides people a very high probability of meeting basic resources needs, the DTM predicts risk aversion. People who are currently above the threshold will

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prefer a fairly bad status quo to the huge risk involved in a rebellion (Theriault et al., 2021; Youngblood et al., 2025). They may also signal their compliance to others, resulting in expressive 'system justification'. However, once the moral order fails to satisfy the basic resource needs of enough people (or seems likely to do so in the near future) then the DTM predicts a widespread turn to risk taking (see Humphreys & Weinstein, 2008 for relevant evidence). Rapid upheaval then becomes more probable.

Political elites can predict that the populace will remain more or less compliant as long as their basic resource needs are met. We should expect elites to put in place institutions just generous enough to allow most people to guarantee basic needs, but not more generous. (Indeed, a predictor of support for redistributive institutions amongst the wealthy is fear that desperate people might report to crime and violence against those with more resources; Sznycer & Bates (2025)). Elites have an incentive to maintain the populace *just* above the threshold, where they are maximally risk averse. This implies that societies may exhibit 'self-organised criticality' (Bak et al., 1988): they will spend most of their time close to a tipping point, where a relatively small subsistence shock could lead to sociopolitical upheaval through a mass turn to risk taking.

A case study comes from the work of Scott (1977) on peasants in Southeast Asia, who considered their ability to secure their subsistence as their central 'moral claim' (p.32). Their criterion of justice was not whether the share of profit taken by the ruling class was reasonable, but rather,'"does this institution…provide me with a living regardless of what the land may yield this season?' (p. 44). They therefore preferred their rent to be proportional to yearly production, rather than a fixed amount, as this eliminates the risk of an unpayable rent liability. Landlords were also pragmatic, postponing taxes in bad years. Colonial powers failed to appreciate the delicate balance of the moral order, imposing uniform and unyielding taxes that put people at risk of falling below the threshold. According to Scott, this explained the unforeseen explosion of political violence in Vietnam and Burma in 1930-1931.

There is a growing literature on how rising resource inequality is associated with sociopolitical instability and civil war (Alesina & Perotti, 1996; Radatz & Baten, 2025). This research is typically at the aggregate level, and, like much research on inequality, currently lacks detailed micro-foundations. The DTM may prove useful for further research into exactly who initiates sociopolitical upheaval, when, and why.

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## 7. Conclusion

We have reviewed the DTM, an idealised model of rational resource-dependent decision making that assumes individuals have S-shaped utility functions caused by the imperfect divisibility of basic needs. The DTM makes predictions about the types of risk people will take, and when. It provides a principled understanding of why poverty, compared to affluence, would be associated both with more risk aversion, and more risk taking. There is empirical evidence grounding its assumptions (section 2), and testing its predictions in diverse ways (section 3).

The DTM has potential to connect individual-level decision making to population-level and societal questions. These questions encompass the effects of increasing inequality on aggregate outcomes, and the behavioural effects and optimal design of social safety nets. For us, the DTM's potential role as a micro-macro linking theory, is one of its main appeals, since bridging the micro and macro is recognized as a central challenge for the human sciences (Box-Steffensmeier et al., 2022).

A middle-range theory like the DTM should be discarded if it fails to give rise to a generative research programme, where generativity is assessed by: successfully predicting new observations, connecting diverse phenomena; producing new avenues for enquiry; and the capacity to be progressively refined by data whilst retaining a core set of assumptions (Lakatos, 1970). We stressed the diversity of relevant evidence in section 3, and the DTM's ability to illuminate population-level phenomena in section 4. We believe that the DTM could form a generative research programme; though of course, only time will tell. Like any mid-level theory of human behaviour, the DTM raises many further detailed questions: about its explanatory scope; its cognitive and neural implementation; and its ability to predict and explain in different socioecological contexts and at different scales. We hope this article will stimulate more research on these issues.

## Conflicts of Interest statement

The authors declare that they have no conflicts of interest.

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References

Akesaka, M., Eibich, P., Hanaoka, C., & Shigeoka, H. (2023). Temporal Instability of Risk Preference among the Poor: Evidence from Payday Cycles. *American Economic Journal: Applied Economics*, *15*(4), 68–99. https://doi.org/10.1257/app.20220073

Alesina, A., & La Ferrara, E. (2002). Who trusts others? *Journal of Public Economics*, *85*(2), 207–234. https://doi.org/10.1016/S0047-2727(01)00084-6

Alesina, A., & Perotti, R. (1996). Income distribution, political instability, and investment. *European Economic Review*, *40*(6), 1203–1228. https://doi.org/10.1016/0014-2921(95)00030-5

Backlund, E., Sorlie, P. D., & Johnson, N. J. (1996). The shape of the relationship between income and mortality in the United States. Evidence from the National Longitudinal Mortality Study. *Annals of Epidemiology*, *6*, 12–20. https://doi.org/10.1016/1047-2797(95)00090-9

Bak, P., Tang, C., & Wiesenfeld, K. (1988). Self-organized criticality. *Physical Review A*, *38*(1), 364.

Banerjee, A. (2004). The Two Poverties. In S. Dercon (Ed.), *Insurance Against Poverty* (pp. 59–75). Oxford University Press. https://doi.org/10.1093/0199276838.003.0004

Banerjee, A. V., & Newman, A. F. (1994). Poverty, Incentives, and Development. *The American Economic Review*, *84*(2), 211–215.

https://doi.org/10.1017/S0140525X26104567 Published online by Cambridge University Press

Barone, G., & Mocetti, S. (2016). Inequality and Trust: New Evidence from Panel Data. *Economic Inquiry*, *54*(2), 794–809. https://doi.org/10.1111/ecin.12309

Barsky, R. B., Juster, F. T., Kimball, M. S., & Shapiro, M. D. (1997). Preference Parameters and Behavioral Heterogeneity: An Experimental Approach in the Health and Retirement Study. *The Quarterly Journal of Economics*, *112*(2), 537–579.

Batruch, A., Sommet, N., & Autin, F. (2025). Advancing the psychology of social class with large-scale replications in four countries. *Nature Human Behaviour*, 1–22. https://doi.org/10.1038/s41562-025-02234-1

Baumard, N. (2019). Psychological origins of the Industrial Revolution. *Behavioral and Brain Sciences*, *42*, e189. https://doi.org/10.1017/S0140525X1800211X

Becker, G. S. (1968). Crime and Punishment: An Economic Approach. *Journal of Political Economy*, *76*(2), 169–217.

Bernoulli, D. (1738). Exposition of a New Theory on the Measurement of Risk. *Econometrica*, *22*(1), 23–36. https://doi.org/10.2307/1909829

Bird, E. J. (2001). Does the welfare state induce risk-taking? *Journal of Public Economics*, *80*(3), 357–383. https://doi.org/10.1016/S0047-2727(00)00117-1

Blasco, J. (2023, December 14). *Measuring deep poverty in developed countries. A cumulative indicator of income and material deprivation*. https://sciencespo.hal.science/hal-04342540

Box-Steffensmeier, J. M., Burgess, J., Corbetta, M., Crawford, K., Duflo, E., Fogarty, L., Gopnik, A., Hanafi, S., Herrero, M., Hong, Y., Kameyama, Y., Lee, T. M. C., Leung, G. M., Nagin, D. S., Nobre, A. C., Nordentoft, M., Okbay, A., Perfors, A., Rival, L. M., … Wagner, C. (2022). The future of human behaviour research. *Nature Human Behaviour*, *6*(1), Article 1. https://doi.org/10.1038/s41562-021-01275-6

Brener, S. A., Frankenhuis, W. E., Young, E. S., & Ellis, B. J. (2024). Social Class, Sex, and the Ability to Recognize Emotions: The Main Effect is in the Interaction. *Personality & Social Psychology Bulletin*, *50*(8), 1197–1210. https://doi.org/10.1177/01461672231159775

Caballero, G. A. (2010). *Risk Preferences Under Extreme Poverty: A Field Experiment* (SSRN Scholarly Paper No. 1720983). https://doi.org/10.2139/ssrn.1720983

https://doi.org/10.1017/S0140525X26104567 Published online by Cambridge University Press

Callen, M., Isaqzadeh, M., Long, J. D., & Sprenger, C. (2014). Violence and Risk Preference: Experimental Evidence from Afghanistan. *American Economic Review*, *104*(1), 123–148. https://doi.org/10.1257/aer.104.1.123

Calnitsky, D., & Gonalons-Pons, P. (2021). The Impact of an Experimental Guaranteed Income on Crime and Violence. *Social Problems*, *68*(3), 778–798. https://doi.org/10.1093/socpro/spaa001

Calvet, L. E., & Sodini, P. (2014). Twin Picks: Disentangling the Determinants of Risk-Taking in Household Portfolios. *The Journal of Finance*, *69*(2), 867–906. https://doi.org/10.1111/jofi.12125

Camp, G. M. (1968). *Nothing to Lose: A Study of Bank Robbery in America*. Yale University Press.

Cartar, R. V. (1991). A Test of Risk-Sensitive Foraging in Wild Bumble Bees. *Ecology*, *72*(3), 888–895. https://doi.org/10.2307/1940590

Carvalho, L. S., Meier, S., & Wang, S. W. (2016). Poverty and Economic Decision-Making: Evidence from Changes in Financial Resources at Payday. *The American Economic Review*, *106*(2), 260–284.

Cassar, A., Healy, A., & von Kessler, C. (2017). Trust, Risk, and Time Preferences After a Natural Disaster: Experimental Evidence from Thailand. *World Development*, *94*, 90–105. https://doi.org/10.1016/j.worlddev.2016.12.042

Castro, D., & Bleys, B. (2023). Do people think they have enough? A subjective income sufficiency assessment. *Ecological Economics*, *205*, 107718. https://doi.org/10.1016/j.ecolecon.2022.107718

Chayanov, A. V. (1926). *The Theory of Peasant Economy*. Homewood.

Cherrier, B. (2023). The Price of Virtue: Some Hypotheses on How Tractability Has Shaped Economic Models. *Œconomia. History, Methodology, Philosophy*, *13–1*, Article 13–1. https://doi.org/10.4000/oeconomia.14116

Coleman, J. S. (1990). *Foundations of Social Theory*. Cambridge University Press.

Conte, A., Levati, M. V., & Nardi, C. (2018). Risk Preferences and the Role of Emotions. *Economica*, *85*(338), 305–328. https://doi.org/10.1111/ecca.12209

https://doi.org/10.1017/S0140525X26104567 Published online by Cambridge University Press

Dalton, P. S., Nhung, N., & Rüschenpöhler, J. (2020). Worries of the poor: The impact of financial burden on the risk attitudes of micro-entrepreneurs. *Journal of Economic Psychology*, *79*, 102198. https://doi.org/10.1016/j.joep.2019.102198

Daly, M. (2023). Inequality, grievances, and the variability in homicide rates. *Evolution and Human Behavior*. https://doi.org/10.1016/j.evolhumbehav.2023.01.005

Davis, A. J., Cohen, E., & Nettle, D. (2025). Associations amongst poverty, loneliness, and a defensive symptom cluster characterised by pain, fatigue, and low mood. *Public Health*, *242*, 272–277. https://doi.org/10.1016/j.puhe.2025.02.037

de Bruijn, E.-J., & Antonides, G. (2022). Poverty and economic decision making: A review of scarcity theory. *Theory and Decision*, *92*(1), 5–37. https://doi.org/10.1007/s11238-021-09802-7

de Courson, B., Frankenhuis, W. E., & Nettle, D. (2025). Poverty is associated with both risk avoidance and risk taking: Empirical evidence for the desperation threshold model from the UK and France. *Proceedings of the Royal Society B: Biological Sciences*, *292*(2040), 20242071. https://doi.org/10.1098/rspb.2024.2071

de Courson, B., Frankenhuis, W. E., Nettle, D., & van Gelder, J.-L. (2023). Why is violence high and persistent in deprived communities? A formal model. *Proceedings of the Royal Society B: Biological Sciences*, *290*(1993), 20222095. https://doi.org/10.1098/rspb.2022.2095

de Courson, B., & Nettle, D. (2021). Why do inequality and deprivation produce high crime and low trust? *Scientific Reports*, *11*(1), 1937. https://doi.org/10.1038/s41598-020-80897-8

Deck, C., & Jahedi, S. (2015). The effect of cognitive load on economic decision making: A survey and new experiments. *European Economic Review*, *78*, 97–119. https://doi.org/10.1016/j.euroecorev.2015.05.004

Delhey, J., & Newton, K. (2003). Who trusts?: The origins of social trust in seven societies. *European Societies*, *5*(2), 93–137. https://doi.org/10.1080/1461669032000072256

Dener, E., Kacelnik, A., & Shemesh, H. (2016). Pea Plants Show Risk Sensitivity. *Current Biology*, *26*(13), 1763–1767. https://doi.org/10.1016/j.cub.2016.05.008

Dietze, P., & Knowles, E. D. (2021). Social Class Predicts Emotion Perception and Perspective-Taking Performance in Adults. *Personality & Social Psychology Bulletin*, *47*(1), 42–56. https://doi.org/10.1177/0146167220914116

https://doi.org/10.1017/S0140525X26104567 Published online by Cambridge University Press

Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J., & Wagner, G. G. (2011). Individual Risk Attitudes: Measurement, Determinants, and Behavioral Consequences. *Journal of the European Economic Association*, *9*(3), 522–550. https://doi.org/10.1111/j.1542-4774.2011.01015.x

Dölling, D., Entorf, H., Hermann, D., & Rupp, T. (2009). Is Deterrence Effective? Results of a Meta-Analysis of Punishment. *European Journal on Criminal Policy and Research*, *15*(1), 201–224. https://doi.org/10.1007/s10610-008-9097-0

Donkers, B., Melenberg, B., & Van Soest, A. (2001). Estimating Risk Attitudes using Lotteries: A Large Sample Approach. *Journal of Risk and Uncertainty*, *22*(2), 165–195. https://doi.org/10.1023/A:1011109625844

Duclos, R., Wan, E. W., & Jiang, Y. (2013). Show Me the Honey! Effects of Social Exclusion on Financial Risk-Taking. *Journal of Consumer Research*, *40*(1), 122–135. https://doi.org/10.1086/668900

Eckel, C. C., El-Gamal, M. A., & Wilson, R. K. (2009). Risk loving after the storm: A Bayesian-Network study of Hurricane Katrina evacuees. *Journal of Economic Behavior & Organization*, *69*(2), 110–124. https://doi.org/10.1016/j.jebo.2007.08.012

Engstrom, H. R., & Laurin, K. (2024). Lower social class, better social skills? A registered report testing diverging predictions from the rank and cultural approaches to social class. *Journal of Experimental Social Psychology*, *111*, 104577. https://doi.org/10.1016/j.jesp.2023.104577

Epper, T., Fehr, E., Hvidberg, K. B., Kreiner, C. T., Leth-Petersen, S., & Rasmussen, G. N. (2022). Preferences predict who commits crime among young men. *Proceedings of the National Academy of Sciences*, *119*(6). https://doi.org/10.1073/pnas.2112645119

Epstein, J. (2012). *Generative Social Science: Studies in Agent-Based Computational Modeling*. Princeton University Press.

Fendinger, N., Lou, S., & Knowles, E. (2023). *Looking for social class in all the wrong places: Differences in social support emerge reliably between—but not within—class contexts* (No. ph3ze_v1). OSF Preprints. https://doi.org/10.31219/osf.io/ph3ze_v1

Foley, C. F. (2011). Welfare Payments and Crime. *The Review of Economics and Statistics*, *93*(1), 97–112.

https://doi.org/10.1017/S0140525X26104567 Published online by Cambridge University Press

Frey, R., Richter, D., Schupp, J., Hertwig, R., & Mata, R. (2021). Identifying robust correlates of risk preference: A systematic approach using specification curve analysis. *Journal of Personality and Social Psychology*, *120*, 538–557. https://doi.org/10.1037/pspp0000287

Friedman, M., & Savage, L. J. (1948). The Utility Analysis of Choices Involving Risk. *Journal of Political Economy*, *56*(4), 279–304.

Gossen, H. H. (1854). *The Laws of Human Relations and the Rules of Human Action Derived Therefrom*. MIT Press.

Gou, Y., Jiang, Y., Rui, L., Miao, D., & Peng, J. (2013). The nonfungibility of mental accounting: A revision. *Social Behavior and Personality: An International Journal*, *41*(4), 625–633. https://doi.org/10.2224/sbp.2013.41.4.625

Gravelle, H. (1998). How much of the relation between population mortality and unequal distribution of income is a statistical artefact? *BMJ*, *316*(7128), 382–385. https://doi.org/10.1136/bmj.316.7128.382

Groenou, M. I. B. V., & Tilburg, T. V. (2003). Network size and support in old age: Differentials by socio-economic status in childhood and adulthood. *Ageing & Society*, *23*(5), 625–645. https://doi.org/10.1017/S0144686X0300134X

Guiso, L., & Paiella, M. (2008). Risk Aversion, Wealth, and Background Risk. *Journal of the European Economic Association*, *6*(6), 1109–1150. https://doi.org/10.1162/JEEA.2008.6.6.1109

Gurr, T. (1970). *Why Men Rebel*. Princeton University Press.

Hanaoka, C., Shigeoka, H., & Watanabe, Y. (2018). Do Risk Preferences Change? Evidence from the Great East Japan Earthquake. *American Economic Journal: Applied Economics*, *10*(2), 298–330. https://doi.org/10.1257/app.20170048

Heath, C., & Soll, J. B. (1996). Mental Budgeting and Consumer Decisions. *Journal of Consumer Research*, *23*(1), 40–52. https://doi.org/10.1086/209465

Higgins, E. T. (1997). Beyond pleasure and pain. *The American Psychologist*, *52*(12), 1280–1300. https://doi.org/10.1037//0003-066x.52.12.1280

Holt, C. A., & Laury, S. K. (2002). Risk Aversion and Incentive Effects. *American Economic Review*, *92*(5), 1644–1655. https://doi.org/10.1257/000282802762024700

https://doi.org/10.1017/S0140525X26104567 Published online by Cambridge University Press

Houston, A. I., Fawcett, T. W., Mallpress, D. E. W., & McNamara, J. M. (2014). Clarifying the relationship between prospect theory and risk-sensitive foraging theory. *Evolution and Human Behavior*, *35*(6), 502–507. https://doi.org/10.1016/j.evolhumbehav.2014.06.010

Humphreys, M., & Weinstein, J. M. (2008). Who Fights? The Determinants of Participation in Civil War. *American Journal of Political Science*, *52*(2), 436–455. https://doi.org/10.1111/j.1540-5907.2008.00322.x

Idler, E. L., & Benyamini, Y. (1997). Self-rated health and mortality: A review of twenty-seven community studies. *Journal of Health and Social Behavior*, *38*(1), 21–37.

Iversen, T., & Soskice, D. (2001). An Asset Theory of Social Policy Preferences. *American Political Science Review*, *95*(4), 875–893. https://doi.org/10.1017/S0003055400400079

Jacobs, B. A., & Wright, R. (1999). Stick-up, Street Culture, and Offender Motivation*. *Criminology*, *37*(1), 149–174. https://doi.org/10.1111/j.1745-9125.1999.tb00482.x

Johnson, M., Pickett, K., Nettle, D., Reed, H., Johnson, E., & Robson, I. (2025). *Basic Income: The Policy that Changes Everything*. Policy Press.

Jost, J. T., Banaji, M. R., & Nosek, B. A. (2004). A Decade of System Justification Theory: Accumulated Evidence of Conscious and Unconscious Bolstering of the Status Quo. *Political Psychology*, *25*(6), 881–919. https://doi.org/10.1111/j.1467-9221.2004.00402.x

Kacelnik, A., & Bateson, M. (1996). Risky Theories—The Effects of Variance on Foraging Decisions. *American Zoologist*, *36*(4), 402–434. https://doi.org/10.1093/icb/36.4.402

Kacelnik, A., & El Mouden, C. (2013). Triumphs and trials of the risk paradigm. *Animal Behaviour*, *86*(6), 1117–1129. https://doi.org/10.1016/j.anbehav.2013.09.034

Kahneman, D., & Deaton, A. (2010). High income improves evaluation of life but not emotional well-being. *Proceedings of the National Academy of Sciences of the United States of America*, *107*(38), 16489–16493. https://doi.org/10.1073/pnas.1011492107

Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica*, *47*(2), 263–291. https://doi.org/10.2307/1914185

Kaiser, C., & Oswald, A. J. (2022). The scientific value of numerical measures of human feelings. *Proceedings of the National Academy of Sciences*, *119*(42), e2210412119. https://doi.org/10.1073/pnas.2210412119

https://doi.org/10.1017/S0140525X26104567 Published online by Cambridge University Press

Kapteyn, A., & Wansbeek, T. (1985). The individual welfare function: A review. *Journal of Economic Psychology*, *6*(4), 333–363. https://doi.org/10.1016/0167-4870(85)90023-6

Kaufmann, D., & Lindauer, D. L. (1986). A model of income transfers for the urban poor. *Journal of Development Economics*, *22*(2), 337–350. https://doi.org/10.1016/0304-3878(86)90135-5

Kelly, M. (2000). Inequality and Crime. *Review of Economics and Statistics*, *82*(4), 530–539. https://doi.org/10.1162/003465300559028

Ketelaar, T., & Ellis, B. J. (2000). Are Evolutionary Explanations Unfalsifiable? Evolutionary Psychology and the Lakatosian Philosophy of Science. *Psychological Inquiry*, *11*(1), 1–21.

Kettlewell, N. (2019). Risk preference dynamics around life events. *Journal of Economic Behavior & Organization*, *162*, 66–84. https://doi.org/10.1016/j.jebo.2019.04.018

Kish-Gephart, J. J. (2017). Social class & risk preferences and behavior. *Current Opinion in Psychology*, *18*, 89–92. https://doi.org/10.1016/j.copsyc.2017.07.034

Korndörfer, M., Egloff, B., & Schmukle, S. C. (2015). A Large Scale Test of the Effect of Social Class on Prosocial Behavior. *PLOS ONE*, *10*(7), e0133193. https://doi.org/10.1371/journal.pone.0133193

Kraus, M. W., Piff, P. K., Mendoza-Denton, R., Rheinschmidt, M. L., & Keltner, D. (2012). Social class, solipsism, and contextualism: How the rich are different from the poor. *Psychological Review*, *119*(3), 546–572. https://doi.org/10.1037/a0028756

Kunreuther, H., & Wright, G. (1974). Safety-First, Gambling, and the Subsistence Farmer. *Miscellaneous Series*, Article 257756. https://ideas.repec.org//p/ags/psumis/257756.html

Kuznar, L. A. (2001). Risk Sensitivity and Value among Andean Pastoralists: Measures, Models, and Empirical Tests. *Current Anthropology*, *42*(3), 432–440. https://doi.org/10.1086/320483

Lakatos, I. (1970). Falsification and the Methodology of Scientific Research Programmes. In A. Musgrave & I. Lakatos (Eds.), *Criticism and the Growth of Knowledge: Proceedings of the International Colloquium in the Philosophy of Science, London, 1965* (Vol. 4, pp. 91–196). Cambridge University Press. https://doi.org/10.1017/CBO9781139171434.009

https://doi.org/10.1017/S0140525X26104567 Published online by Cambridge University Press

Levitt, S. D., & Venkatesh, S. A. (2000). An Economic Analysis of a Drug-Selling Gang's Finances. *The Quarterly Journal of Economics*, *115*(3), 755–789. https://doi.org/10.1162/003355300554908

Lipton, M. (1977). Rice and Risk. Decision Making among Low-Income Farmers. *The Economic Journal*, *87*(348), 825–828. https://doi.org/10.2307/2231398

Lipton, P. (2004). *Inference to the Best Explanation* (2nd ed.). Routledge.

Lundahl, M. (1977). [Review of *Review of Rice and Risk, Decision Making among Low-Income Farmers*, by J. A. Roumasset]. *The Scandinavian Journal of Economics*, *79*(3), 390–393. https://doi.org/10.2307/3439727

Lybbert, T. J., & Barrett, C. B. (2007). Risk Responses to Dynamic Asset Thresholds. *Review of Agricultural Economics*, *29*(3), 412–418.

Lynch, Smith, G. D., Harper, S., Hillemeier, M., Ross, N., Kaplan, G. A., & Wolfson, M. (2004). Is income inequality a determinant of population health? Part 1. A systematic review. *The Milbank Quarterly*, *82*(1), 5–99. https://doi.org/10.1111/j.0887-378x.2004.00302.x

MacCoun, R., & Reuter, P. (1992). Are the Wages of Sin $30 an Hour? Economic Aspects of Street-Level Drug Dealing. *Crime & Delinquency*, *38*(4), 477–491. https://doi.org/10.1177/0011128792038004005

Mace, R. (1990). Pastoralist herd compositions in unpredictable environments: A comparison of model predictions and data from camel-keeping groups. *Agricultural Systems*, *33*(1), 1–11. https://doi.org/10.1016/0308-521X(90)90067-Z

Mace, R., & Houston, A. (1989). Pastoralist strategies for survival in unpredictable environments: A model of herd composition that maximises household viability. *Agricultural Systems*, *31*(2), 185–204. https://doi.org/10.1016/0308-521X(89)90020-6

MacLeod, W. B. (2023). *Optimal Deterrence, Inequality and the Jean-Valjean Effect* (Working Paper No. 31786). National Bureau of Economic Research. https://doi.org/10.3386/w31786

Mani, A., Mullainathan, S., Shafir, E., & Zhao, J. (2013). Poverty Impedes Cognitive Function. *Science*, *341*(6149), 976–980. https://doi.org/10.1126/science.1238041

Marx, K. (1849). *Wage-Labor and Capital*. International Publishers.

https://doi.org/10.1017/S0140525X26104567 Published online by Cambridge University Press

Masson, R. T. (1974). Utility Functions with Jump Discontinuities: Some Evidence and Implications from Peasant Agriculture. *Economic Inquiry*, *12*(4), 559–566. https://doi.org/10.1111/j.1465-7295.1974.tb00422.x

Mather, M., & Lighthall, N. R. (2012). Both Risk and Reward are Processed Differently in Decisions Made Under Stress. *Current Directions in Psychological Science*, *21*(2), 36–41. https://doi.org/10.1177/0963721411429452

McNamara, J. M., & Houston, A. I. (1992). Risk-sensitive foraging: A review of the theory. *Bulletin of Mathematical Biology*, *54*(2), 355–378. https://doi.org/10.1016/S0092-8240(05)80031-X

Merton, R. K. (1938). Social Structure and Anomie. *American Sociological Review*, *3*(5), 672–682. https://doi.org/10.2307/2084686

Mishra, S., Gregson, M., & Lalumière, M. L. (2012). Framing effects and risk-sensitive decision making. *British Journal of Psychology*, *103*(1), 83–97. https://doi.org/10.1111/j.2044-8295.2011.02047.x

Mishra, S., & Lalumière, M. L. (2010). You can't always get what you want: The motivational effect of need on risk-sensitive decision-making. *Journal of Experimental Social Psychology*, *46*(4), 605–611. https://doi.org/10.1016/j.jesp.2009.12.009

Miyata, S. (2003). Household's risk attitudes in Indonesian villages. *Applied Economics*, *35*(5), 573–583. https://doi.org/10.1080/0003684022000020823

Morin, O. (2022). Cultural conservatism. *Journal of Cognition and Culture*, *22*(5), 406–420.

Mullanaithan, S., & Shafir, E. (2013). *Scarcity: Why Having So Little Means So Much*. Henry Holt & Co.

Nagin, D. S. (2013). Deterrence: A Review of the Evidence by a Criminologist for Economists. *Annual Review of Economics*, *5*(1), 83–105. https://doi.org/10.1146/annurev-economics-072412-131310

Nettle, D., Chevallier, C., de Courson, B., Johnson, E. A., Johnson, M. T., & Pickett, K. E. (2025). Short-term changes in financial situation have immediate mental health consequences: Implications for social policy. *Social Policy & Administration*. https://doi.org/10.1111/spol.13065

https://doi.org/10.1017/S0140525X26104567 Published online by Cambridge University Press

Nettle, D., & Dickins, T. E. (2022). Why is greater income inequality associated with lower life satisfaction and poorer health? Evidence from the European Quality of Life Survey, 2012. *The Social Science Journal*, *0*(0), 1–12. https://doi.org/10.1080/03623319.2022.2117888

Nettle, D., & Wolff, A. (2025). Psychological utility functions for income are S-shaped: Evidence from UK adults. *PsyArXiv*. https://osf.io/ztvmp_v1

Page, L., Savage, D. A., & Torgler, B. (2014). Variation in risk seeking behaviour following large losses: A natural experiment. *European Economic Review*, *71*, 121–131. https://doi.org/10.1016/j.euroecorev.2014.04.009

Patterson, E. B. (1991). Poverty, Income Inequality, and Community Crime Rates. *Criminology*, *29*(4), 755–776. https://doi.org/10.1111/j.1745-9125.1991.tb01087.x

Pettit, P. (2014). *Just Freedom: A Moral Compass for a Complex World.* W.W. Norton & Co.

Pietras, C. J., Cherek, D. R., Lane, S. D., & Tcheremissine, O. (2006). Risk Reduction and Resource Pooling on a Cooperation Task. *The Psychological Record*, *56*(3), 387–401. https://doi.org/10.1007/BF03395557

Pietras, C. J., & Hackenberg, T. D. (2001). Risk-Sensitive Choice in Humans as a Function of an Earnings Budget. *Journal of the Experimental Analysis of Behavior*, *76*(1), 1–19. https://doi.org/10.1901/jeab.2001.76-1

Piff, P. K., Kraus, M. W., Côté, S., Cheng, B. H., & Keltner, D. (2010). Having less, giving more: The influence of social class on prosocial behavior. *Journal of Personality and Social Psychology*, *99*(5), 771–784. https://doi.org/10.1037/a0020092

Pinker, S. (2011). *The Better Angels of our Nature: Why Violence Has Declined*. Viking.

Radatz, L., & Baten, J. (2025). Measuring Multidimensional Inequality and Its Impact on Civil War Outbreak in 193 Countries, 1810–2010. *Review of Income and Wealth*, *71*(2), e70016. https://doi.org/10.1111/roiw.70016

Radkani, S., Holton, E., de Courson, B., Saxe, R., & Nettle, D. (2023). Desperation and inequality increase stealing: Evidence from experimental microsocieties. *Royal Society Open Science*, *10*(7), 221385. https://doi.org/10.1098/rsos.221385

https://doi.org/10.1017/S0140525X26104567 Published online by Cambridge University Press

Raghunathan, R., & Pham, M. T. (1999). All Negative Moods Are Not Equal: Motivational Influences of Anxiety and Sadness on Decision Making. *Organizational Behavior and Human Decision Processes*, *79*(1), 56–77. https://doi.org/10.1006/obhd.1999.2838

Raphael, S., & Winter-Ebmer, R. (2001). Identifying the Effect of Unemployment on Crime. *The Journal of Law and Economics*, *44*(1), 259–283. https://doi.org/10.1086/320275

Rawls, J. (1971). *A Theory of Justice*. Harvard University Press.

Rayo, L., & Becker, G. S. (2007). Evolutionary Efficiency and Happiness. *Journal of Political Economy*, *115*(2), 302–337. https://doi.org/10.1086/516737

Rode, C., Cosmides, L., Hell, W., & Tooby, J. (1999). When and why do people avoid unknown probabilities in decisions under uncertainty? Testing some predictions from optimal foraging theory. *Cognition*, *72*(3), 269–304. https://doi.org/10.1016/s0010-0277(99)00041-4

Rossmo, D. K., & Summers, L. (2022). Uncertainty and heuristics in offender decision-making: Deviations from rational choice. *Journal of Criminal Justice*, *81*, 101923. https://doi.org/10.1016/j.jcrimjus.2022.101923

Roumasset, J. A. (1976). *Rice and Risk: Decision Making Among Low Income Farmers*. North-Holland Publishing Company.

Roy, A. D. (1952). Safety First and the Holding of Assets. *Econometrica*, *20*(3), 431–449. https://doi.org/10.2307/1907413

Rudolph, M., & Starke, P. (2020). How does the welfare state reduce crime? The effect of program characteristics and decommodification across 18 OECD-countries. *Journal of Criminal Justice*, *68*, 101684. https://doi.org/10.1016/j.jcrimjus.2020.101684

Rufrancos, H. G., Power, M., Pickett, K. E., & Wilkinson, R. G. (2013). Inequality and Crime: A Review and Explanation of the Time–series Evidence. *Sociology and Criminology*, *1*, 1000103.

Schilbach, F., Schofield, H., & Mullainathan, S. (2016). The Psychological Lives of the Poor. *American Economic Review*, *106*(5), 435–440. https://doi.org/10.1257/aer.p20161101

Scholer, A. A., Zou, X., Fujita, K., Stroessner, S. J., & Higgins, E. T. (2010). When risk seeking becomes a motivational necessity. *Journal of Personality and Social Psychology*, *99*(2), 215–231. https://doi.org/10.1037/a0019715

https://doi.org/10.1017/S0140525X26104567 Published online by Cambridge University Press

Schroyen, F., & Aarbu, K. O. (2018). Attitudes Towards Large Income Risk in Welfare States: An International Comparison. *Economica*, *85*(340), 846–872. https://doi.org/10.1111/ecca.12267

Scott, J. C. (1977). *The Moral Economy of the Peasant: Rebellion and Subsistence in Southeast Asia*. Yale University Press.

Sen, A. (1983). Poor, Relatively Speaking. *Oxford Economic Papers*, *35*(2), 153–169.

Shah, A. K., Mullainathan, S., & Shafir, E. (2012). Some consequences of having too little. *Science*, *338*(6107), 682–685. https://doi.org/10.1126/science.1222426

Skwara, F. (2023). Effects of mental accounting on purchase decision processes: A systematic review and research agenda. *Journal of Consumer Behaviour*, *22*(5), 1265–1281. https://doi.org/10.1002/cb.2193

Smith, A. (1776). *The Wealth of Nations*. W. Strahan and T. Cadell.

Soster, R. L., Gershoff, A. D., & Bearden, W. O. (2014). The Bottom Dollar Effect: The Influence of Spending to Zero on Pain of Payment and Satisfaction. *Journal of Consumer Research*, *41*(3), 656–677. https://doi.org/10.1086/677223

Starcke, K., & Brand, M. (2016). Effects of stress on decisions under uncertainty: A meta-analysis. *Psychological Bulletin*, *142*(9), 909–933. https://doi.org/10.1037/bul0000060

Stellar, J. E., Manzo, V. M., Kraus, M. W., & Keltner, D. (2012). Class and compassion: Socioeconomic factors predict responses to suffering. *Emotion*, *12*(3), 449–459. https://doi.org/10.1037/a0026508

Stephens, D. W. (1981). The logic of risk-sensitive foraging preferences. *Animal Behaviour*, *29*(2), 628–629. https://doi.org/10.1016/S0003-3472(81)80128-5

Sznycer, D., & Bates, T. C. (2025). Bismarckian welfare revisited: Fear of being violently dispossessed motivates support for redistribution. *Evolution and Human Behavior*, *46*(6), 106754. https://doi.org/10.1016/j.evolhumbehav.2025.106754

Thaler, R. H. (1999). Mental accounting matters. *Journal of Behavioral Decision Making*, *12*(3), 183–206. https://doi.org/10.1002/(SICI)1099-0771(199909)12:3%253C183::AID-BDM318%253E3.0.CO;2-F

The Economist. (2024). The economics of American lotteries. *The Economist*.

https://doi.org/10.1017/S0140525X26104567 Published online by Cambridge University Press

Theriault, J. E., Young, L., & Barrett, L. F. (2021). The sense of should: A biologically-based framework for modeling social pressure. *Physics of Life Reviews*, *36*, 100–136. https://doi.org/10.1016/j.plrev.2020.01.004

Thome, H. (2007). Explaining the Long-Term Trend in Violent Crime: A Heuristic Scheme and Some Methodological Considerations. *International Journal of Conflict and Violence (IJCV)*, *1*(2), Article 2. https://doi.org/10.4119/ijcv-2753

Timmer, D. (2022). Justice, Thresholds, and the Three Claims of Sufficientarianism. *Journal of Political Philosophy*, *30*(3), 298–323. https://doi.org/10.1111/jopp.12258

Townsend, P. (1979). *Poverty in the United Kingdom: A Survey of Household Resources and Standards of Living*. Pengui.

Treffers, T., Koellinger, P. D., & Picot, A. (2016). Do Affective States Influence Risk Preferences?: Evidence from Incentive-Compatible Experiments. *Schmalenbach Business Review*, *17*(3–4), 309–335. https://doi.org/10.1007/s41464-016-0018-3

Tucker, B. (2012). Do Risk and Time Experimental Choices Represent Individual Strategies for Coping with Poverty or Conformity to Social Norms?: Evidence from Rural Southwestern Madagascar. *Current Anthropology*, *53*(2), 149–180. https://doi.org/10.1086/664569

Turchin, P., Gavrilets, S., & Goldstone, J. A. (2017). Linking "Micro" to "Macro" Models of State Breakdown to Improve Methods for Political Forecasting. *Cliodynamics*, *8*(2). https://doi.org/10.21237/C7clio8237429

Van Praag, B. (1971). The welfare function of income in Belgium: An empirical investigation. *European Economic Review*, *2*(3), 337–369. https://doi.org/10.1016/0014-2921(71)90045-6

Vilalta, C., Cadena, E., Garrocho, C., & Fondevila, G. (2024). Beyond the immediate effects of income inequality on homicide rates: A reply to Daly's critique. *Evolution and Human Behavior*, *45*(4), 106597. https://doi.org/10.1016/j.evolhumbehav.2024.106597

Wiggins, D. (1998). *Needs, Values, Truth: Essays in the Philosophy of Value*. Oxford University Press.

Wik, M., Aragie Kebede, T., Bergland, O., & Holden, S. T. (2004). On the measurement of risk aversion from experimental data. *Applied Economics*, *36*(21), 2443–2451. https://doi.org/10.1080/0003684042000280580

https://doi.org/10.1017/S0140525X26104567 Published online by Cambridge University Press

Wilkinson, R. G., & Pickett, K. E. (2009). Income Inequality and Social Dysfunction. *Annual Review of Sociology*, *35*(1), 493–511. https://doi.org/10.1146/annurev-soc-070308-115926

Wilson, J. Q., & Abrahamse, A. (1992). Does crime pay? *Justice Quarterly*, *9*(3), 359–377. https://doi.org/10.1080/07418829200091431

Winterhalder, B., Lu, F., & Tucker, B. (1999). Risk-sensitive adaptive tactics: Models and evidence from subsistence studies in biology and anthropology. *Journal of Archaeological Research*, *7*(4), 301–348. https://doi.org/10.1007/BF02446047

Wolff, A., Carbuccia, L., Makine, Z., & Nettle, D. (2025). Living on the edge: Investigating experiences of poverty through the lens of the Desperation Threshold Model. *SocArXiv, https://osf.io/r4svz_v1*. https://osf.io/r4svz_v1

Wu, J., Balliet, D., Yuan, M., Li, W., Chen, Y., Jin, S., Luan, S., & Van Lange, P. A. M. (2025). Social class and prosociality: A meta-analytic review. *Psychological Bulletin*, *151*(3), 285–321. https://doi.org/10.1037/bul0000469

Youngblood, M., Marie, A., & Morin, O. (2025). *Status quo conservatism: A theory and a model* (No. ngb58_v1). SocArXiv. https://doi.org/10.31235/osf.io/ngb58_v1

Zeisberger, S. (2022). Do people care about loss probabilities? *Journal of Risk and Uncertainty*, *65*(2), 185–213. Scopus. https://doi.org/10.1007/s11166-022-09391-y

Zhang, C. Y., & Sussman, A. B. (2018). Perspectives on mental accounting: An exploration of budgeting and investing. *Financial Planning Review*, *1*(1–2), e1011. https://doi.org/10.1002/cfp2.1011

Zhao, S., Segovia, M. S., & Nayga, R. M. (2025). *The Effect of Cognitive Load on Economic Decision-Making Under Scarcity* (SSRN Scholarly Paper No. 5097338). Social Science Research Network. https://doi.org/10.2139/ssrn.5097338

https://doi.org/10.1017/S0140525X26104567 Published online by Cambridge University Press