

DEMOGRAPHIC DEBATE

Is the Theory of Planned Behaviour an appropriate model for human fertility?

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The Theory of Reasoned Action (or Theory of Planned Behaviour, TPB), developed primarily by Fishbein and Ajzen, has been useful in hundreds of studies and for more than three decades. A quick examination of Google Scholar data on the author Ajzen¹ (Harzing 2010) shows over 65,000 citations; three TPB-related papers have over 10,000 citations and five more have over 1,000 citations each! The impact and usefulness of this general approach is unquestioned. The popularity of the approach does not appear to be fading. Fishbein and Ajzen's recent book (2010) provides the most recent statement of the theory, documents its use in multiple contexts and responds to some critiques. Ajzen, a keynote speaker at the recent VID conference (*From intentions to behaviour: reproductive decision-making in a macro-micro perspective*), made the case for the general TPB approach, but he challenged demographers to alter it in ways that make it appropriate for fertility research. A number of fertility-related papers and research projects have adopted aspects of this approach and the VID conference adopted the TPB as a cornerstone of discussion. Thus, we ask the fundamental question: Is the theory of planned behaviour an appropriate model for human fertility? Before answering it, we first describe briefly the TPB, review some troubling evidence vis-à-vis TPB and fertility and then raise more general issues that we have attempted to resolve in our own work (Johnson-Hanks et al. 2011).

The dominant theoretical models in demography have conceptualised fertility as a result of a rational decision-making process where the costs and benefits of actions are weighed. The TPB is in this class of models (along with Bandura's 1977 Social Learning Theory and micro-economic models following Becker 1991). But in Vienna, Ajzen was careful to point out that the TPB did not assume

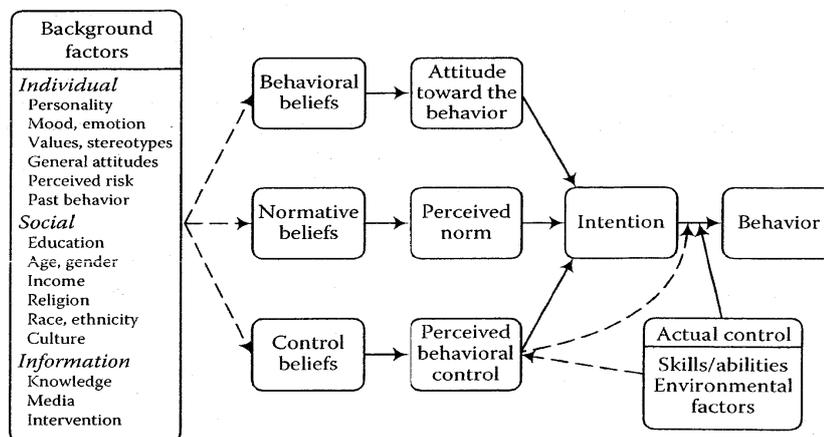
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¹ We use Harzing's Publish or Perish (2010) software that links to Google Scholar data, parses the results and presents citation counts and author impact statistics.

economic rationality. Instead, the TPB proposes that behaviour is the product of *behavioural intentions*, which are in turn products of the persons' *attitudes* and *subjective norms*. Attitudes reflect persons' own beliefs/values and subjective norms reflect those of a relevant set of significant others. Persons subjectively weight these attitudes and norms to form an intention that is the key proximate determinant of behaviour. The most recent statements of the theory (Fishbein and Ajzen 2010) also allow for beliefs about *behavioural control* and *actual control*. This component is important given the large disjuncture between intent and behaviour in many applications, including fertility. The TPB can be represented as in Figure 1.

Figure 1:
Schematic of the Theory of Planned Behaviour (TPB)



Source: Figure 11. Fishbein and Ajzen (2010)

In fact, the issue of control is the first question many demographers would raise about the TPB - it is well known that over the last few decades roughly one-half of all pregnancies in the US were unintended² (or similar results from other countries).³ How can one use a model of planned behaviour when empirical evidence shows that so much fertility was unintended? Again, an incremental

² Ventura et al. (2008) report that about 20% of all pregnancies end in abortion and two-thirds in live births (the remainder is fetal loss or miscarriage). About one-third of births are unintended (unwanted or unplanned, see Henshaw 1998), thus omitting miscarriage and assuming that abortions reflect unintended pregnancies, roughly 50% of conceptions are unintended (20% abortion + 33% unintended live births).

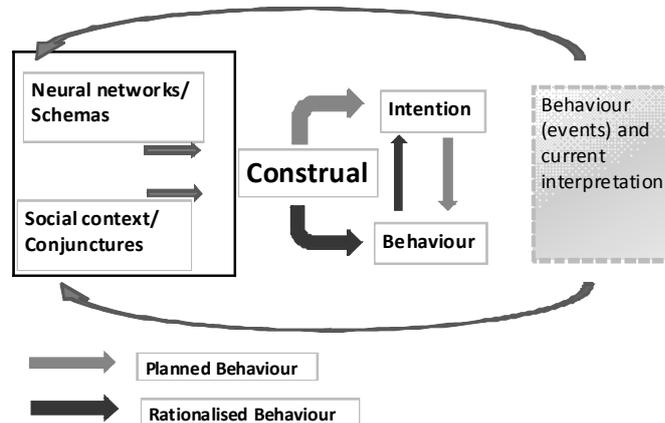
³ Unintended pregnancy and abortion are more common in the US than in some other countries. But unintended pregnancies are a nontrivial proportion of all pregnancies wherever sound data exist.

adjustment to the model allows an explanation - persons don't have sufficient control to realise intentions. Thus, the TPB can easily acknowledge contraceptive failure and even fatalism that leads to non-use. Our concerns with TPB lie elsewhere, but as we will explain these concerns certainly contribute to the lack of intent-behaviour correspondence.

We raise four fundamental concerns. First, we question not whether an intent can be frustrated by lack of control but whether it is appropriate to assume a clear intent during the time preceding conception. Second, the TPB's parsimony is often a strength. But in the case of fertility its focus on the psychological antecedents of a single outcome (the predicted behaviour, having a birth) ignores key aspects of the reproductive process. TPB posits that the fertility outcome is determined in isolation from other outcomes. However, this outcome is both complex (reflecting a series of decisions: e.g. having sex, using contraception, choosing abortion) and interdependent with many other life behaviours (working, partnering, marrying). Third, the TPB models intention at a point of time, but fertility planning (if it occurs at all) unfolds over the course of many years. We believe an appropriate model for human fertility must be flexible enough to allow for life's zigs and zags - the opportunities and constraints that develop over time. Fourth and finally, TPB is strongly centred within the individual, providing for an influence of the perceived views of others but not for material constraints and incentives for childbearing. Thus, it is very much a micro-model and does not incorporate well the influence of materials in the world.

We illustrate our concerns with the TPB framework by describing a theory that we have developed and propose for fertility analysis, the Theory of Conjunctural Action (TCA). Our framework draws on recent social theory (practice theory, Sewell 1992, 2005; Giddens 1979, 1984) as well as on knowledge about dual processes in the brain (Johnson-Hanks et al. 2011). We offer Figure 2 as a way of contrasting our approach with the parallel schematic of TPB in Figure 1. The first contrast to note is that our model is recursive; the process we envision operates over time and allows for a path-dependence that can produce cumulative advantage/disadvantage and allows for serendipity. Thus we adopt the key insights from the life course framework - that the past impacts the present, and the present the future. Key concepts in the TPB (attitudes and subjective norms) can vary over the life course of an individual in our conceptualisation. Attitudes and norms can also be dramatically altered across periods because of events that change how people think about (or reinterpret) their past and recent experience. These processes allow individual differences to emerge and aggregate change to occur.

Figure 2:
Schematic of the Theory of Conjectural Action (TCA) for Comparison with TPB



A second key difference in these approaches is the characterisation of the decision-making process. On the left-hand side of Figure 2, we posit the interaction of schemas (represented in the brain) and social context (conjunctures). In brief, our brain's neural network holds many 'frames' or schemas for processing information. A schema is a mental structure that represents some aspect of the world.⁴ Brains acquire schemas through experience and experience reshapes schemas over time. A *conjuncture* is a set of circumstances, specific to a concrete place and time, in which actors, settings, social structural constraints and normative expectations intersect. All behaviour is anchored in a conjuncture. Behaviour results from a process of construal in which the external stimuli in a conjuncture are interpreted through schemas allowing one to determine "what is going on" and "how I should I respond". The brain's use of a particular schema in the interpretation of events is usually automatic and unconscious, determined by contextual cues. At this point, two things can happen to generate behaviour. Behaviour may be generated without the mediation of conscious thought (an automatic or habitual action, for example, shaking hands or taking the same exit every day to go to work). Behaviour may also be the product of conscious, reasoned deliberation. The TPB privileges the latter; the TCA acknowledges that both occur but points to the dominance of automatic processing in determining most of what human beings do.

Note that the role of *intention* is dramatically different in an unconscious process, if it can be said to play any part at all. *Intention* may be ascribed to an action as a post hoc rationalisation for a behaviour already performed, but it

⁴ For example, we may have schemas for going on a date, for contraceptive pills and for parenthood. Schemas are abstract and partial representations that are used by the brain to facilitate the interpretation of incoming stimuli (D'Andrade 1995; Strauss and Quinn 1997).

cannot exist in the sense of a conscious commitment to act that exists before the action occurs. Simple examples are indisputable: a professional baseball player is asked how he hit a 96 mph fastball for a home run. He responds: "I saw the ball was going to be a strike, I decided to swing and to pull it to leftfield; then I just put the bat on the ball." The timing required to hit a 96mph fastball does not allow for conscious decision-making. The behaviour 'happens' and the actor is forced to 'make sense of it'. This is the red arrow in Figure 2. We do not deny that sometimes conscious processing occurs in the prefrontal cortex in much the way envisioned in TPB (the green arrows).

Can this acknowledgement of the brain's multiple processing help in the study of fertility? We respond yes and to elaborate follow the four criticisms levelled at the outset. First, we pointed out that fertility can occur without a clear intent. The meaning of 'intention' was not discussed extensively at the VID conference. Recent work in psychology defines it as a quality of actions that are purposeful: if an action is intentional, that means that the purpose preceded the action (Malle et al. 2003). There are two problems for demographers using this concept. One is that when we measure intentions retrospectively, we do not do well: reports of pregnancy intention for births that have already occurred line up poorly with intentions expressed prior to conception (Williams and Abma 2000; Williams et al. 1999). This is not surprising. Feelings about a pregnancy change over time, generally becoming more positive between conception and birth as well as after birth (Miller 2003; Miller et al. 2009).

A second problem is that when we measure fertility intentions prospectively, we cannot be sure we are actually measuring intentions. We acknowledge that intentions are useful in predicting fertility (Westoff and Ryder 1977; Hermalin et al. 1979, Morgan and Rackin 2010). But if a teenager reports that she wants two children, does this mean she has formed a clear intent and commitment to act? Drawing on the TCA, we propose that many such reports are instead measures of the family schemas held by teens (and other women who have not formed specific intentions). As such, they may be useful proxies for the schemas that shape both intentions and fertility behaviours. This raises several issues. How can we interpret the responses to fertility intention questions? Do their meanings vary over the life course and circumstances of the respondent? When are fertility intentions likely to be salient drivers of behaviour?

Our second criticism of the TPB as a model for understanding fertility is its assumption "that the fertility outcome was determined in isolation from other outcomes. ... (and) .. is both complex (reflecting a series of decisions: e.g. having sex, using contraception, choosing abortion) and interdependent with many other life behaviours (working, partnering, marrying)". Our TCA model resolves these issues by acknowledging the set of conjunctures that produce a live birth and the multiplicity of schemas that could be used in the construal process at each conjuncture. For instance, suppose a young woman has unprotected sex with a young man to show her devotion to him, decides not to have an abortion because

her parents argue that abortion is immoral and equivalent to murder and does not put the child up for adoption hoping that her possession of the child would tie the young man to her emotionally and financially. Thus, a baby and parenthood result from a set of conjunctures that are construed in ways that have more to do with love, abortion and commitment than to childbearing and parenthood. Further, illustrating our first criticism, our example never involves a clear intention to have a child. If asked about her intention, then the young woman might resort to a schema about fertility intentions that rationalises her behaviour - not unlike the baseball player. But nothing like the TPB has occurred in this example.

Our third concern was the TPB's inability to accommodate a process in which intentions may be made and remade over the life course. This is, in part, a corollary of our second concern: beliefs and attitudes are likely to shift as people get educated, married or laid off from work. Few of the background factors listed in the left panel of Figure 1.1 remain stable over time. Because of this, TPB may be most useful in thinking about the process producing intentions and behaviour over the short run, that is, for period analyses. TPB addresses some contingencies by including a moderator for whether or not a person actually *can* control the behavioural outcome. This is useful for addressing the tendency for accidental pregnancies and infertility problems to upset fertility plans. However, it doesn't allow for the possibility, suggested by the TCA, that the meaning of the intended outcome is structured in ways that produce contrary results. Consider the 30-year-old who cannot get pregnant and is told by her doctor that she can only conceive if she uses an egg donor. Like many infertile couples who desperately want children, this woman decides not to move forward. To her, it is not a matter of cost, it is a matter of schemas: parenthood means having a child who shares her DNA. Similarly, other women want to become mothers but cannot find marital partners; they forego parenthood rather than compromising their schema of a two-parent family.

Our fourth and final concern is that TPB is "strongly centred within the individual, providing for an influence of the perceived views of others but not for material aspects of the social context". Demographers have laboured long and hard to explicate the effects on fertility of social contexts, including public policies, economic conditions, educational and employment systems and reproductive health services. Most conceptualisations of fertility decision-making nest the individual in these contexts. Our focus on conjunctures in the TCA explicitly places every behaviour in a concrete context in which both the material and schematic elements of structure - the organisations, services, policy constraints *and* the norms, values and meanings they convey - prime or motivate behaviour. Our TCA model is inherently a micro-macro model.

We do not mean to suggest that TPB has no place in fertility research. The model is especially likely to be useful when dealing with questions that address short-term influences on fertility behaviour which are not closely tied to macro-level structural constraints. Other models, such as those developed by Miller

(2011) and numerous economic models, share many of the characteristics of TPB. We believe they are similarly useful and often more so because they address some of the problems we raise. However, we believe that a more general, next-generation, model of fertility needs to do more. The TCA also has its drawbacks. Schemas and conjunctures are hard to measure using the conventional tools of demography; recursive pathways are often difficult to model. However, the elements of TCA resonate closely with scientific literatures in the fields of cognitive psychology and neuroscience, anthropology and sociology, behavioural economics and social psychology.

Finally, the scientific support for the modular brain and multiple levels of processing support our conceptualisation of how the brain processes information. The basic features of life course and period effects (via important events) also resonate with accepted facts in studies of individual and social histories. Thus our framework is *consilient* - Wilson's (1998) term for a "jumping together" of key facts from a range of relevant sciences. We believe the TCA not only provides a meta-theory that can integrate previously disparate strands in the study of fertility; it can give demography a richer partnership with the extraordinary on-going advances in the study of human behaviour. While our conceptualisations in the TCA may not appeal to all, the issues we raise need to be confronted by those adopting The Theory of Planned Behaviour and similar approaches.

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