Can Attitude Theory Improve Rational Choice Theory or Vice Versa?

A Comparison and Integration of the Theory of Planned Behavior and Value-Expectancy Theory

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Introduction

This presentation provides a detailed comparison of two theories:

- the attitude theory of Martin Fishbein and Icek Ajzen (we focus on **TPB** – Theory of Planned Behavior)
- and rational choice theory – **RCT** (we focus on value expectancy theory – **VET**).

Questions are:

- What are the differences and similarities?
- If there are differences: which hypotheses are more plausible?
- Could an integrated theory be formulated?
Is such a comparison meaningful?

To be sure, the theories both explain identical phenomena, but, it seems, **TPB is clearly superior to RCT**.

Let us look at some **characteristics** of the two theories.
The Theory of Planned Behavior (TPB)

- **First ideas** included in Fishbein 1963 – more than 50 years ago. TPB was proposed in Ajzen 1985.
- **Cumulative development:** A detailed discussion of the critique of the theory, comparisons with other theories, detailed descriptions of research and measurement procedures are provided in Fishbein and Ajzen 2010.
- There are **standardized measurement procedures** (see 2010 book).
- There is basically **one version** – TPB (theory of planned behavior).
There is overwhelming empirical confirmation.

Between 1980 and 2010 more than 1000 peer-reviewed empirical papers have been published (Gold 2011, see also http://people.umass.edu/aizen/tpbrefs.html) that test the theory. See also a new meta-analysis by Winkelnkemper, Ajzen and Schmidt (2017) of 163 studies that test TPB which provides “support for the TPB’s basic tenets …”.

## Rational Choice Theory – compared with TPB

<table>
<thead>
<tr>
<th>The Theory of Planned Behavior Behavior (TPB)</th>
<th>Rational choice Theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>First ideas 1963</td>
<td>D. Bernoulli 1738, Bentham 1789</td>
</tr>
<tr>
<td>Cumulative development of one version…</td>
<td>????</td>
</tr>
<tr>
<td>Standardized measurement procedures for one version …</td>
<td>????</td>
</tr>
<tr>
<td>Overwhelming confirmation of one version of the theory …</td>
<td>???</td>
</tr>
<tr>
<td>By far more than 1000 reviewed articles about one theory</td>
<td>???</td>
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</tbody>
</table>
Daniel Bernoulli (1700-1782)

From 1738: Specimen theoriae novae de mensura sortis

Beweis einer Neuen Theorie Der Messung des Glücks
This is the German translation from 1896 – there is also an English translation.

Everything can be downloaded for free!

Excellent summary of the development of utility theory is Stigler 1950, part I and II (reference at the end of the presentation).
Jeremy Bentham (1748-1832)

AN INTRODUCTION TO THE PRINCIPLES OF MORALS AND LEGISLATION.

BY JEREMY BENTHAM, ESQ.

BENCHER OF LINCOLN'S INN: AND LATE OF QUEEN'S COLLEGE, OXFORD, B.A.

IN TWO VOLUMES.

A NEW EDITION, CORRECTED BY THE AUTHOR.

LONDON:
PRINTED FOR W. PICKERING,
LINCOLN'S-INN FIELDS;
AND E. WILSON, ROYAL EXCHANGE.
1826.

First edition 1789
It thus seems that the Fishbein-Ajzen theory

- is a prototype of a good theory in the social sciences and
- seems clearly superior to RCT on all counts (except age!)

Does it really make sense to compare two such different theories in order to choose the better one or improve one of them?
Would you compare an Isetta with a Rolls Royce if you are considering buying a good car?
There is another example that seems to make a comparison meaningful: the story of David and Goliath.

David (who could symbolize the inferior theory – VET) wins against the seemingly strong Goliath (symbolizing the superior theory -- TPB).

The inferior RCT could include hypotheses that contradict (and falsify) TPB.

Example of car: the Isetta has perhaps a revolutionary technology for some parts which could be used by Rolls Royce producers!
From the philosophy of science (Lakatos 1970) we know that even if a theory is well confirmed, problems could emerge in the light of another theory.

To conclude, a comparison of TPB and RCT is meaningful.

So far there is only a comparison of TPB and RCT by Ajzen in 1996 and by Fishbein/Ajzen 2010, but only some of the hypotheses of the theories are discussed. There is thus so far no detailed comparison of both theories.
Contents of the Presentation

- Brief outline of the theory of Planned Behavior (TPB)
- Brief outline of value-expectance theory (VET)
- Comparison and discussion of the most important similarities and differences
- Proposal of an integrated theory
The Theory of Planned Behavior (TPB)

Beliefs about evaluations of attributes of behavior
\[ A_B = b_i e_i \]

External normative beliefs
\[ N_I = n_i m_i \]

Single control beliefs and their impact
\[ PBC = c_i p_i \]

Attitude towards the behavior

Perceived behavioral control

Perceived norm

Intentions

Behavior

Interaction effect

Actual behavioral control
So this is the model without actual behavioral control that will be discussed:

Beliefs about evaluations of attributes of behavior
\[ A_B = b_i e_i \]

External normative beliefs
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Single control beliefs and their impact
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Attitude towards the behavior
Perceived Norm
Intentions
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Interaction effect
Problems of the Theory

As every theory is the social sciences TPB is *controversial*.

A detailed discussion of the critique is in the book of 2010 (chapter 6). One question is the “sufficiency” of the model, as the authors put it. The question is whether other factors are to be included in explaining the variables of the model. Such variables might be, for example, identity or past behavior.

Even if one does not agree with every defense of the theory, it is a very well confirmed theory and it is worthwhile to compare it with VET.
Value-Expectancy Theory

Only brief summary:

- The **SEU** (subjective expected utility) or net utility of a **perceived behavioral alternative** is **defined** in the following way:
  - For each perceived behavioral **consequence** of a behavioral alternative it must be empirically determined:
    - **utility** and
    - **subjective probability** (belief)
  - The products of are **added** for each behavioral alternative.
  - \[ SEU(a_i) = \sum p_{ij} U(O_j) \] \( i \) is from 1 to \( N \) and refers to perceived behavioral alternatives, \( j \) are the outcomes (behavioral consequences)

- **Theory** assumes: Behavior with the highest SEU is chosen
  \[ SEU(a_i) > SEU(a_k) \rightarrow a_i \] // If the SEU for a behavior \( i \) is greater than the SEU for any other behavior \( k \), behavior \( i \) is chosen.
Note that

Utilities = preferences,

Subjective probabilities = perceived constraints

$SEU(a_i) > SEU(a_j) \rightarrow a_i = \text{subjective utility maximization}$
References for VET:

In German see Esser 1999, 247-293.
What Do the Theories Have in Common?

- Behavior may be **spontaneous** or **deliberate**.
  - TPB: discussion and application of the MODE model by Fazio and co-authors.

- **Perceived behavioral control** as an explanatory variable = perceived constraints in RCT or subjective probabilities in VET.

- **Norms** (as social pressures) as an explanatory variable are behavioral consequences in VET.
## Differences Between the Theories

### Summary of the Differences

<table>
<thead>
<tr>
<th>Attributes of the Theories</th>
<th>TPB</th>
<th>VET</th>
</tr>
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<tbody>
<tr>
<td>Assumption of “rationality”</td>
<td>No</td>
<td>Yes (Fishbein/Ajzen allegation)</td>
</tr>
<tr>
<td>Subjective utility maximization</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Attitudes</strong> or <strong>goals</strong> as explanatory variables</td>
<td>Attitudes</td>
<td>Goals</td>
</tr>
<tr>
<td>Intention as a dependent and independent variable</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>A multi-stage causal model explaining attitudes, norms and perceived behavioral control</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Other differences ...</td>
<td>Not discussed</td>
<td></td>
</tr>
</tbody>
</table>
„Rationality“ in TPB: Fishbein and Ajzen‘s Critique of RCT

The target of the critique is a narrow version of RCT.

Example: TPB does not, in contrast to RCT, assume that beliefs are accurate or complete. This is not assumed in a wide RCT.

Thus, only a particular version of RCT is incompatible with TPB, not the wide version assuming „bounded rationality.“
Additional quotations for the critique of TPB:

TPB does not, in contrast to RCT, assume that people “fully and systematically review all their beliefs every time they are about to perform a behavior” (451, Ajzen and Fishbein 2000: 7). This is not assumed in a wide RCT.

…“no assumption about rationality” is made. “Attitudes are assumed to follow reasonably from beliefs about the attitude object” (Ajzen 1996: 299). It is not clarified what “reasonable” means.
The Rejection of Utility Maximization in TPB

The assumption of subjective utility maximization is made implicitly, without using the terms „utility maximization.“
This becomes particularly clear when we compare TPB’s explanation of attitudes and VET’s explanation of behavior:

**Attitude** $A_B = \sum b_i e_i$. This attitude has an indirect effect on the respective behavior.

**Behavior** $a_i : \text{SEU}(a_i) = \sum p_{ij} U(O_j)$; $\text{SEU}(a_i) > \text{SEU}(a_j) \rightarrow a_i$

Ajzen and Fishbein (1969) write that both theories are „essentially equivalent“ (403).

When there are several behavioral alternatives this implies (Ajzen 1969: 403-404) that the behavior with the highest $A_B$ is chosen.

Thus, TPB implicitly applies the hypothesis of subjective utility maximization.
Attitudes or Goals as Explanatory Variables?

In RCT goals (= preferences) are the major determinants of behavior.

TPB claims that attitudes (= evaluations) are relevant. This is a long social psychological tradition.

No comparative discussion of these conflicting propositions is provided.

The relevance of goals is admitted: “There appears to be general agreement among social psychologists that most human behavior is goal-directed” (Ajzen 1985, p. 11).
There are numerous references to goals when specific phenomenana are explained (e.g. Ajzen 1985).

For example, students who have the goal to study at a particular university perform all kinds of required behaviors to reach this goal such as taking the SAT (Ajzen 1985). 57).

In explaining smoking cessation the goal to stop smoking is discussed (158-159).

It is odd that the importance of goals for performing behavior is emphasized time and again, but that goals are not included in the theory.
Should attitudes thus be eliminated from TPB?

**Attitudes are sometimes among the determinants of behavior.** For example, a positive attitude toward a presidential candidate will influence voting for the candidate.

**Attitudes do not always determine behavior.**
For example, a positive attitude toward the work of Rembrandt does not lead to buy a Rembrandt or to steal one.

There are also *causal relationships between attitudes and goals*. For example, if I like Rembrandt I will more likely have the goal to buy a book about Rembrandt or go to Rijksmuseum in Amsterdam.
Idea by Kruglanski, Arie et al. 2015: "The Rocky Road From Attitudes to Behaviors: Charting the Goal Systemic Course of Actions" *Psychological Review* 122(4): 598-620

The authors specify **conditions under which attitudes generate goals.**

**Attitudes should thus be added as a causal factor for goals.**
Should Intention Be Included in VET/RCT and, if so, how?

Research on TPB shows:

- Intentions are direct causes of behavior.
- Intentions have a strong effect on behavior.
Arguments against including intentions in RCT

- It is **difficult** or perhaps impossible to **measure the existence of intention** when behavior is **spontaneous**. Example (Etzioni 1986, 168): “the mother who dashes into the fire to save her child ... she feels responsible for” (Etzioni 1986, p. 168). However, if measurement is sometimes difficult, this is **no reason to neglect the respective variable**.

- „**Triviality**“ of the relationship of intention and behavior – in the sense that a relationship is **not surprising**. This is not an acceptable criterion for excluding or including a factor in a theory. „Triviality“ of a hypothesis – e.g. crime is caused by biological factors – depends on existing knowledge. This changes over time. So a valid factor should sometimes be included, then – if „triviality“ changes – excluded. This is **not meaningful**.
Arguments in favor of including intentions in RCT

- One should **include all causally relevant variables** in a theory.
- Intentions could be used as a **proxy for incentives** which are often difficult to measure. (There are strong correlations between intentions and behavior…) In studies about protest often **willingness** to protest is included.
- When in cross-sectional surveys hypotheses about the explanation of behavior are tested, the behavior is often measured in the past and the determinants in the present. Intentions are here a useful **proxy for behavior**.

**Conclusion**: It seems advisable to include intention in VET.
How Can Intentions Be Included in VET?

Alternative 1:
SEU(a_i) > SEU(a_k) ➔ Intention_i ➔ a_i

Alternative 2:
SEU(a_i) ➔ Intention_i
SEU(a_k) ➔ Intention_k
Intention_i > Intention_k ➔ a_i

Alternative 1 seems more plausible …
An individual will form an intention only if he or she has decided to perform a certain behavior, based on the SEU of each behavior. For example, if I am considering to go to a movie, to a pub or for a walk, I will not form an intentions for each of these behavioral alternatives. Only if it is clear which SEU is highest, an intention to perform this behavior originates. Thus, an intention will not arise for each behavior that is taken into consideration, but only for the behavior that best for the actor.
How Can the two Theories Be Integrated?

**Procedure**: the TPB model is the starting point. I add hypotheses – from the perspective of RCT – to this model.
The Integrated Model – Step 1

Beliefs about evaluations of attributes of behavior
$A_b = b, c_i$

External normative beliefs
$N_i = n, m_i$

Single control beliefs and their impact
$PBC = c, p_i$

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Attitude towards the behavior

Perceived Norm

Intentions

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Interaction effect

Attitude towards the behavior

Perceived Norm

Intentions

Behavior

Goals/preferences (U in VET)

Other factors (Kruglanski et al. 2015)

Attitude towards the behavior

Perceived norm

Intenotions (VET: for the behavior with the highest SEU)

Behavior
The Integrated Model – Step 2

Beliefs about evaluations of attributes of behavior $A = \hat{a}b_c$

External normative beliefs $N = \hat{n}_m$

Single control beliefs and their impact $PBC = \hat{c}_p$

Attitude towards the behavior

Perceived Norm $\rightarrow$ Intentions $\rightarrow$ Behavior

Perceived behavioral control

Interaction effect

Other factors (Kruglanski et al. 2015)

Attitude toward the behavior

Goals/preferences ($U$ in VET)

VET: utilities and probabilities

Perceived norm

= Intentions (VET: for the behavior with the highest SEU)

PBC/Perceived constraints ($p$ in VET)

Behavior
The Integrated Model – Step 3

Beliefs about/evaluations of attributes of behavior $A_i=b_i, c_i$

External normative beliefs $N_i=n_i, m_i$

Single control beliefs and their impact $PBC = c_i, p_i$

Attitude towards the behavior

Perceived norm

Perceived behavioral control (PBC)

Intentions

Behavior

Other factors (Kruglanski et al. 2015)

Goals/preferences (U in VET)

Intentions (VET: for the behavior with the highest SEU)

PBC/Perceived constraints (p in VET)
The Integrated Model

Summary:
- **Intentions** become part of TPB and VET.
- **Goals** should be added to TPB.
- **Attitudes** should be added to VET.
- **Final stage** of TPB is added.
- **Subjective utility maximization** is part of both theories.
Back to David (RCT) and Goliath (TPB) – who won?

Tie – UNENTSCHIEDEN ?!
Summary and Conclusion

- The critique of RCT by Fishbein/Ajzen is unjustified – only a very narrow version is addressed.
- TPB needs some modification, from the perspective of RCT
- RCT can learn from TPB
- Empirical research necessary!
References


This presentation is based on

Thanks for listening