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The Reasoned Action Approach and the Theories of Reasoned Action and Planned Behavior

Martin S. Hagger

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Introduction

Since the inception of the theory of reasoned action in late 1970s by Martin Fishbein and Icek Ajzen, the theories of reasoned action and planned behavior and, in its more recent incarnation, the reasoned action approach, have been among the most influential approaches to predicting and understanding intentional behavior. The theories have been widely applied across multiple behaviors, contexts, and populations. With their roots in attitude theory and the social cognitive tradition, the theories focus on individuals' beliefs with respect to future performance of a given behavior. The theory of reasoned action was the earliest version of the theory. The central construct of the theory is intention, a motivational construct that is considered the most proximal determinant of behavior. Intention reflects the extent to which an individual is likely to plan to do, and invest effort in pursuing, a given behavior. Intention is conceptualized as a function of two belief-based constructs: attitudes and subjective norms. Attitudes are positive or negative evaluations of performing the behavior in future, while subjective norms reflect beliefs that significant others would want them to perform the behavior. The theory of reasoned action demonstrated effectiveness in predicting variability in people's behavior across many contexts, populations, and behaviors. Ajzen modified the theory of reasoned action to account for behaviors that were not under the complete control of the individual. The theory of planned behavior introduced perceived behavioral control as an additional predictor of intentions. In circumstances where individuals' perceptions of control closely reflect actual control, perceived behavioral control would determine the strength of the Intention-Behavior Relationship. When their perceived behavioral control was high, individuals would be more likely to act on their intentions. Ajzen also proposed that when perceived behavioral control closely reflects actual control, it will directly predict behavior. Fishbein and Ajzen proposed the reasoned action approach as a further development in their theory based on research. The reasoned action approach extends the theory of planned behavior by differentiating between different subcomponents of the attitude, subjective norm, and perceived behavioral control constructs in the theory of planned behavior. The popularity of the theories is due to their relative simplicity and flexibility, as well as their effectiveness in accounting for substantive variance in behavior. The theories have also served as the basis for extended theories that encompass new constructs toward developing more comprehensive explanations of behavior, and to test salient processes that determine action such as the relationship between intentions and behavior. This annotated bibliography outlines key books, chapters, and articles that chart the progress of these theories from their origins and development to their application and extension. The list of readings offered in this bibliography is not exhaustive, but aims to provide readers with a representative overview of the origins of the theories, key theoretical

assumptions and debates, the empirical evidence testing the theories, and research on extensions and practical application of the theories.

General Overviews

This section begins with Ajzen and Fishbein's original conceptual reviews that detail the origins of the theories of reasoned action and planned behavior, and, ultimately, the reasoned action approach. Influenced by the literature on attitudes and social cognition, Fishbein and Ajzen 1975 and Ajzen and Fishbein 1977 outline the links between attitudes and behavior, with intention as a fundamental construct that mediates this relation. These formative writings formed the bases of the theory of reasoned action, and the seminal book Ajzen and Fishbein 1980 provides the definitive exposition of the theory, its predictions, and its application. Ajzen outlined his theory of planned behavior in a seminal book chapter, Ajzen 1985, and a follow-up research article (Ajzen 1991) and book (Ajzen 2005). The broader, generalized framework of the reasoned action approach is outlined in the two contemporary books Ajzen, et al. 2007 and Fishbein and Ajzen 2010, with a comprehensive overview provided by Conner and Sparks 2015.

Ajzen, I. 1985. From intentions to actions: A theory of planned behavior. In *Action-control: From cognition to behavior*. Edited by J. Kuhl and J. Beckman, 11–39. Heidelberg, Germany: Springer.

Seminal research article outlining the theoretical bases for the theory of planned behavior, which introduces the construct of perceived behavioral control as a predictor of intentions and behavior.

Ajzen, I. 1991. The theory of planned behavior. *Organizational Behavior and Human Decision Processes* 50.2: 179–211.

DOI: 10.1016/0749-5978(91)90020-T

This article further outlines the conceptual and theoretical bases of the theory of planned behavior, and outlines how the key predictors are underpinned by sets of behavioral, normative, and control beliefs. It also outlines limitations and boundary conditions such as inclusion of past behavior and the sufficiency of the theory. Available online by subscription or purchase.

Ajzen, I. 2005. *Attitudes, personality and behavior*. 2d ed. Berkshire, UK: Open Univ. Press.

A comprehensive and updated treatment of theory and research on personality, attitudes, behavioral consistency, intentions, and actions, culminating with the conceptual bases of the theory of planned behavior.

Ajzen, I., D. Albarracín, and R. Hornik, eds. 2007. *Prediction and change of health behavior: Applying the reasoned action approach*. Mahwah, NJ: Lawrence Erlbaum Associates.

This edited volume presents chapters outlining key conceptual issues relating to the theory of reasoned action and how it has been modified and extended. It introduces the reasoned action approach, and provides examples and reviews of applications of the approach in multiple

contexts such as smoking cessation, HIV prevention, health promotion, and changing multiple behaviors.

Ajzen, I., and M. Fishbein. 1977. Attitudes-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin* 84.5: 888–918.

DOI: 10.1037/0033-2909.84.5.888

The authors comprehensively review research on the link between attitudes and behavior. They introduce the constructs of subjective norms and intentions, and outline the importance of correspondence in terms of target and action for precision in attitude-behavior relations. Available online by subscription or purchase.

Ajzen, I., and M. Fishbein. 1980. *Understanding attitudes and predicting social behavior*. Upper Saddle River, NJ: Prentice Hall.

The definitive text on the theory of reasoned action in which the authors set out the key premises of the theory, and comprehensively cover issues relating to the development of the constructs and their Measurement, means to test the theory, and its applications.

Conner, M. T., and P. Sparks. 2015. The theory of planned behavior and reasoned action approach. In *Predicting and changing health behaviour: Research and practice with social cognition models*. Edited by M. T. Conner and P. Norman, 142–188. Maidenhead, UK: Open Univ. Press.

Up-to-date, comprehensive treatment of the conceptual, theoretical, and applied issues relating to the theory of planned behavior and reasoned action approach in health contexts. The chapter provides important guidance on research designs, measurement, and interventions based on these approaches.

Fishbein, M., and I. Ajzen. 1975. *Belief, attitude, intention and behavior*. Reading, MA: Addison-Wesley.

This book outlines the fundamental bases of the theory of reasoned action, and introduce the construct of intentions as a focal construct that reflects the behavioral function of attitudes.

Fishbein, M., and I. Ajzen. 2010. *Predicting and changing behavior: The reasoned action approach*. New York: Psychology Press.

Recognizing developments in research on the theories of reasoned action and planned behavior, the authors introduce the more comprehensive reasoned action approach. The approach distinguishes between specific subcomponents of the attitude, subjective norm, and perceived behavioral control constructs, and outlines their conceptual bases and means to test them. It also outlines how the theory can be used as a basis to change behavior.

Tests of the Theories

A substantial body of evidence testing the predictions of the theories of reasoned action and planned behavior now exists. This section presents empirical research articles that provide Key Tests of theory predictions, and important Evidence Syntheses of each theory. The key

tests represent research articles that report typical or notable studies that have applied the theory to predict and understand behavior, and are exemplary in their conceptual grounds and methodological rigor. Given the vast literature using the theories, evidence syntheses provide extremely useful summaries of the current state of the evidence for the theory. Many use meta-analytic techniques to quantify the size of, and degree of variability in, the relations among model constructs and enable researchers examine how relations among the theory constructs may vary according to salient conceptual, methodological, and population-level moderator variables.

Key Tests

This section presents some key empirical studies testing the predictions of the theories. Ajzen and Madden 1986 outlines a prototypical study design to test the theory of planned behavior, which has been replicated hundreds of times since. This section also includes articles that explore relations between the underlying belief structures and the more direct measures of the theory of planned behavior constructs like Ajzen and Fishbein 2008 and Armitage and Conner 1999. There are also articles that chart the development of more differentiated forms of constructs from the theory of planned behavior, such as Hagger and Chatzisarantis 2005 and Elliott and Ainsworth 2012, which were precursors to the reasoned action approach. A contemporary test of the reasoned action approach is also included. Liska 1984 is a highly original article which tests some ‘causal’ hypotheses of the theory of reasoned action and was way ahead of its time. Lastly, the panel study Reinecke, et al. 1996 demonstrates effects of the theory constructs on intentions and behavior over a one-year period.

Ajzen, I., and M. Fishbein. 2008. Scaling and testing multiplicative combinations in the expectancy-value model of attitudes. *Journal of Applied Social Psychology* 38.9: 2222–2247.

DOI: 10.1111/j.1559-1816.2008.00389.x

The authors outline the importance of expectancy-value models of beliefs and provide a basis for the development of measures of theory of planned behavior constructs. They use simulated data to demonstrate how belief strength and outcome expectancies are effective in predicting direct measures attitude. Available online by subscription or purchase.

Ajzen, I., and T. J. Madden. 1986. Prediction of goal directed behavior: Attitudes, intentions and perceived behavioral control. *Journal of Experimental Social Psychology* 22.5: 453–474.

DOI: 10.1016/0022-1031(86)90045-4

This article reports two tests of the predictions of the theory of planned behavior, and provides a template for subsequent research designs and Measurement of theory constructs. It also demonstrates that the theory of planned behavior accounts for a greater amount of variance in behavior than the theory of reasoned action. Available online by subscription or purchase.

Armitage, C. J., and M. T. Conner. 1999. The theory of planned behavior: Assessment of predictive validity and “perceived control.” *British Journal of Social Psychology* 38.1: 35–54.

DOI: 10.1348/014466699164022

This article reports a study in which relations between sets of salient behavioral beliefs and attitudes, control beliefs, and perceived behavioral control are tested using ‘partial’ correlations. Findings indicate that attitudes and perceived behavioral control tend to be uniquely associated with a small number of beliefs. Available online by subscription or purchase.

Conner, M. T., R. McEachan, R. Lawton, and P. Gardner. 2017. Applying the reasoned action approach to understanding health protection and health risk behaviors. *Social Science & Medicine* 195:140–148.

DOI: 10.1016/j.socscimed.2017.10.022

This article reports a test of predictions of the reasoned action approach in six health risk and six health protection behaviors. Instrumental and experiential attitudes, descriptive norms, and capacity predicted intentions for both risk and protection behaviors, while injunctive norms predicted intentions only for protection behaviors. Available online by subscription or purchase.

Elliott, M. A., and K. Ainsworth. 2012. Predicting university undergraduates’ binge-drinking behavior: A comparative test of the one- and two-component theories of planned behavior. *Addictive Behaviors* 37.1: 92–101.

DOI: 10.1016/j.addbeh.2011.09.005

The authors report an effective comparison of the theory of planned behavior and the reasoned action approach, and demonstrate that the latter was superior in accounting for variance in intention and behavior. They also report a unique simulation analysis to show that large-sized changes in the theoretical constructs are necessary for small-to-moderate sized changes in intentions and behavior. Available online by subscription or purchase.

Hagger, M. S., and N. L. D. Chatzisarantis. 2005. First- and higher-order models of attitudes, normative influence, and perceived behavioural control in the theory of planned behaviour. *British Journal of Social Psychology* 44.4: 513–535.

DOI: 10.1348/014466604X16219

This article reports a test of the theory of planned behavior while simultaneously differentiating between affective and instrumental attitudes, descriptive and injunctive norms, and perceived control and self-efficacy. Results support the theory, and demonstrate the differentiated components are subsumed by higher order factors. Available online by subscription or purchase.

Liska, A. E. 1984. A critical examination of the causal structure of the Fishbein/Ajzen attitude-behavior model. *Social Psychology Quarterly* 47.1: 61–74.

DOI: 10.2307/3033889

The author reports a study using innovative designs to test the proposed directional and reciprocal effects of attitudes on behavior in the theory of reasoned action, including whether attitudes and subjective norms cause intentions, and whether effects of intentions on behavior

are also met with reciprocal effects of behavior on intentions. Available online by subscription or purchase.

Reinecke, J., P. Schmidt, and I. Ajzen. 1996. Application of the theory of planned behavior to adolescents' condom use: A panel study. *Journal of Applied Social Psychology* 26.9: 749–772.

DOI: 10.1111/j.1559-1816.1996.tb01128.x

Tested the predictive validity of the theory of planned behavior for condom use over a one-year period using a 'panel' design in which all study measures, including behavior, were measured at both time points. The research demonstrated that constructs demonstrated considerable change over the year, and that past intentions and behavior were significant predictors of subsequent intentions. Available online by subscription or purchase.

Evidence Syntheses

Numerous meta-analyses of findings from research on the theories of reasoned action and planned behavior have been conducted. These quantitative syntheses have provided important information on the average size of effects among the key constructs in the theory and the variability across studies. Importantly, they have also presented opportunities to test key moderators of theory relations. Many meta-analyses have been conducted; some have been general in approach, while others have been confined to specific behavioral domains (e.g., exercise, alcohol consumption, condom use). Sheppard, et al. 1988 is the first meta-analysis of the theory of reasoned action, and uses it as a basis for recommending future modifications. Armitage and Conner 2001 is particularly noteworthy because it focuses on multiple behavioral domains and also examines relations between beliefs and direct measures of theory of planned behavior constructs. Meta-analyses have also been used to test predictions of the model across studies using the synthesized data, like Hagger, et al. 2002; Albarracín, et al. 2001; and McEachan, et al. 2011. By comparison, there are fewer tests of the reasoned action approach, and only relatively recently has there been sufficient data to facilitate a meta-analytic synthesis (see McEachan, et al. 2016).

Albarracín, D., B. T. Johnson, M. Fishbein, and P. A. Muellerleile. 2001. Theories of reasoned action and planned behavior as models of condom use: A meta-analysis. *Psychological Bulletin* 127.1: 142–161.

DOI: 10.1037/0033-2909.127.1.142

This article meta-analyzed research applying the theories of reasoned action and planned behavior to condom use, and provided a comparison of the theories as well as a first meta-analytic synthesis of the critical influence of past behavior in the theory. Available online by subscription or purchase.

Armitage, C. J., and M. T. Conner. 2001. Efficacy of the theory of planned behaviour: A meta-analytic review. *British Journal of Social Psychology* 40.4: 471–499.

DOI: 10.1348/014466601164939

A comprehensive meta-analysis of the theory of planned behavior across multiple behavioral domains, notable for its examination of relations among the belief-based measures of the theory constructs and the overarching 'direct' measures. Available online by subscription or purchase.

Hagger, M. S., N. L. D. Chatzisarantis, and S. J. H. Biddle. 2002. A meta-analytic review of the theories of reasoned action and planned behavior in physical activity: Predictive validity and the contribution of additional variables. *Journal of Sport and Exercise Psychology* 24.1: 3–32.

DOI: 10.1123/jsep.24.1.3

This article reports a meta-analytic comparison of the theories of reasoned action and planned behavior, and is the first to provide a meta-analytic test of the unique effects of self-efficacy and past behavior as additional predictors in the theory.

McEachan, R. R. C., M. T. Conner, N. J. Taylor, and R. J. Lawton. 2011. Prospective prediction of health-related behaviors with the Theory of Planned Behavior: A meta-analysis. *Health Psychology Review* 5.2: 97–144.

DOI: 10.1080/17437199.2010.521684

A meta-analysis of research applying the theory of planned behavior to health behavior adopting prospective designs. Notable in examining effects of model relationships across different domains of health behavior including risk behaviors, detection behaviors, physical activity, dietary behaviors, safe sex behaviors, and abstinence behaviors, as well as examining theory predictions when controlling for past behavior. Available online by subscription or purchase.

McEachan, R. R. C., N. J. Taylor, R. Harrison, R. J. Lawton, P. Gardner, and M. T. Conner. 2016. Meta-analysis of the reasoned action approach (RAA) to understanding health behaviors. *Annals of Behavioral Medicine* 50.4: 592–612.

DOI: 10.1007/s12160-016-9798-4

This article reports a meta-analysis of studies testing predictions of the reasoned action approach across multiple health behaviors, and examines differences in the averaged effects between the theory constructs in health protection and health risk behaviors.

Sheppard, B. H., J. Hartwick, and P. R. Warshaw. 1988. The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. *Journal of Consumer Research* 15.3: 325–343.

DOI: 10.1086/209170

This article provides the first meta-analysis of the theory of reasoned action. It provides a lucid introduction to the theory and its predictions, a quantitative summary of the research applying the theory across multiple behaviors, and the extent to which researchers have overstepped the boundary conditions of theory and the consequences of doing so. Available online by subscription or purchase.

Basic Processes and Moderators

The theories of reasoned action and planned behavior have provided a framework for exploring some basic processes that determine human behavior across multiple social contexts. An important effect in the theory of reasoned action is the link between attitudes and behavior, a classic topic of study within social psychology, and a focal topic of discussion by Fishbein and Ajzen in the readings discussed in General Overviews. Considerable attention has also been paid to the Intention-Behavior Relationship, arguably the cornerstone of the theories, and this subsection introduces a series of key readings on the subject. Researchers have also explored the role of Accessibility and Stability of the constructs from the theories, particularly intentions, as potential moderators of relations between their component constructs. This section outlines some examples of research articles that evaluate these moderator effects.

Intention-Behavior Relationship

Orbell and Sheeran 1998 is the first analysis to demonstrate that a substantive proportion of individuals who stated having an intention to act subsequently failed to participate in the intended behavior. This group was labeled the ‘inclined abstainers.’ Further support is provided by Rhodes and de Bruijn in an ‘unsuccessful intenders’ meta-analysis. Sheeran and Webb 2016 provides a useful overview of this ‘intention-behavior’ gap and salient contributing factors. Research has indicated a number of factors that might strengthen the intention-behavior relationship. A key hypothesis of the theory is that individuals with greater control over their behavior will be more likely to carry out their intentions. This moderating effect of perceived behavioral control on the intention behavior relationship has rarely been tested, but Steinmetz, et al. 2011 provides the most comprehensive treatment. An influential line of research on intention-behavior relations has focused on planning. Orbell, et al. 1997 pioneered this research within the theory of planned behavior, demonstrating that augmenting intentions with ‘if-then’ plans, known as ‘implementation intentions,’ improved intention enactment. In addition, Sheeran and Conner 2017 demonstrates that the extent to which predictors of intentions (e.g., attitudes, norms, perceived control) all support participating in the behavior, termed ‘motivational coherence,’ strengthens the intention-behavior relationship. Van Bree, et al. 2013 and Norman and Conner 2006 demonstrate that people with strong habits, measured by self-report and past behavioral frequency, tend to exhibit weaker effects of intentions on behavior.

Norman, P., and M. T. Conner. 2006. The theory of planned behaviour and binge drinking: Assessing the moderating role of past behaviour within the theory of planned behaviour. *British Journal of Health Psychology* 11.1: 55–70.

DOI: 10.1348/135910705X43741

This article reports research to indicate that the stronger the relationship between past behavior and behavior, the weaker the intention-behavior relationship, findings which have been interpreted as the influence of habits or nonconscious processes on behavior. Available online by subscription or purchase.

Orbell, S., S. Hodgkins, and P. Sheeran. 1997. Implementation intentions and the theory of planned behavior. *Personality and Social Psychology Bulletin* 23.9: 945–954.

DOI: 10.1177/0146167297239004

This article indicates how the formation of ‘if-then’ plans, or ‘implementation intentions,’ increases the likelihood of individuals acting on their intentions. The authors show that these ‘post-intentional’ plans aid individuals’ recall of their intentions. Available online by subscription or purchase.

Orbell, S., and P. Sheeran. 1998. “Inclined abstainers”: A problem for predicting health-related behaviour. *British Journal of Social Psychology* 37.2: 151–165.

DOI: 10.1111/j.2044-8309.1998.tb01162.x

Reports research demonstrating that a substantive proportion of individuals who state an intention to participate in health-related behavior fail to do so. An influential article that provided the impetus for subsequent research on the ‘intention-behavior gap.’ Available online by subscription or purchase.

Rhodes, R. E., and G. -J. de Bruijn. 2013. How big is the physical activity intention-behaviour gap? A meta-analysis using the action control framework. *British Journal of Health Psychology* 18.2: 296–309.

DOI: 10.1111/bjhp.12032

This meta-analysis examined the size of the intention-behavior relationship among participants across studies on physical activity. Approximately 36 percent of the sample were classified as ‘unsuccessful intenders,’ corroborating Orbell and Sheeran 1998 on ‘inclined abstainers.’ Available online by subscription or purchase.

Sheeran, P., and M. T. Conner. 2017. Improving the translation of intentions into health actions: The role of motivational coherence. *Health Psychology* 36.11: 1065–1073.

DOI: 10.1037/hea0000553

This article introduces the construct of ‘motivational coherence.’ Individuals whose direct antecedents of intentions from the theory of planned behavior (attitudes, subjective norms, and perceived behavioral control) were all aligned toward doing the behavior had stronger intention-behavior relations. Available online by subscription or purchase.

Sheeran, P., and T. L. Webb. 2016. The intention–behavior gap. *Social and Personality Psychology Compass* 10.9: 503–518.

DOI: 10.1111/spc3.12265

This article provides a comprehensive contemporary summary of research on the ‘intention-behavior gap’ including origins and conceptual bases, summarizes the effect of candidate moderating factors, and identifies strategies that assist people to follow-through on their intentions. Available online by subscription or purchase.

Steinmetz, H., E. Davidov, and P. Schmidt. 2011. Three approaches to estimate latent interaction effects: Intention and perceived behavioral control in the theory of planned behavior. *Methodological Innovations Online* 6.1: 95–110.

DOI: 10.4256/mio.2010.0030

Provides the most comprehensive treatment of the rarely tested moderating effect of perceived behavioral control on the intention-behavior relationship, demonstrating that higher levels of perceived behavioral control lead to stronger effects of intentions on behavior. Available online.

van Bree, R. J. H., M. M. van Stralen, C. Bolman, A. N. Mudde, H. de Vries, and L. Lechner. 2013. Habit as moderator of the intention–physical activity relationship in older adults: A longitudinal study. *Psychology & Health* 28.5: 514–532.

DOI: 10.1080/08870446.2012.749476

This article demonstrates that intention-behavior relations depend on the extent to which the behavior of interest is habitual. When behaviors are habitual, effects of intentions on behavior tend to be weaker. Available online

Accessibility and Stability

Properties of the constructs from the theories of reasoned action and planned behavior have been shown to moderate the Intention-Behavior Relationship. The meta-analysis Cooke and Sheeran 2004 identifies several moderators of the intention-behavior relationship, particularly the stability of constructs from the theory. Similarly, Conner, et al. 2000 indicates how consistent scores on measures of the constructs from the theories over time—that is, their temporal stability— was an important moderator of intention-behavior relations. A related line of research discussed in Doll and Ajzen 1992 demonstrates that the extent to which individuals are able to access beliefs about behaviors moderated intention-behavior relations.

Conner, M. T., P. Sheeran, P. Norman, and C. Armitage. 2000. Temporal stability as a moderator of relationships in the theory of planned behaviour. *British Journal of Social Psychology* 39.4: 469–493.

DOI: 10.1348/014466600164598

This article examines the effect of stability of constructs (intentions, attitudes, subjective norms, perceived behavioral control) from the theories of reasoned action and planned behavior on relations among theory constructs. More stable intentions were found to be related to stronger relations between intentions and behavior, intentions and attitudes, and intentions and past behavior. Available online by subscription or purchase.

Cooke, R., and P. Sheeran. 2004. Moderation of cognition-intention and cognition-behaviour relations: A meta-analysis of properties of variables from the theory of planned behaviour. *British Journal of Social Psychology* 43.2: 159–186.

DOI: 10.1348/0144666041501688

The authors apply meta-analysis to test the moderating role of multiple properties of the constructs from the theories (accessibility, temporal stability, direct experience, involvement, certainty, ambivalence, and affective-cognitive consistency) in moderating relations between theory constructs and behavior. Intention stability was found to be the most consistent moderator, and moderated all relations in the theory. Available online by subscription or purchase.

Doll, J., and I. Ajzen. 1992. Accessibility and stability of predictors in the theory of planned behavior. *Journal of Personality and Social Psychology* 63.5: 754–765.

DOI: 10.1037/0022-3514.63.5.754

This article reports research examining the effect of temporal stability and accessibility—measured by response latencies toward attitude stimuli—of theory constructs on relations between attitudes and behavior. Stability, but not accessibility, moderated the attitude–behavior relationship. Available online by subscription or purchase.

Measurement

Social psychologists interested in testing the predictions of attitude and social cognitive theories have emphasized the importance of the validity of scaled self-report measures of theory constructs. These issues are extremely pertinent to studies testing predictions of the theories of reasoned action and planned behavior, and the reasoned action approach. There are also additional measurement issues that have been considered in research testing the theories, and their potential to affect the validity and interpretation of these tests. Ajzen 2006 is an online resource that provides a comprehensive, freely accessible guide to measuring constructs from the theories. This section also identifies some of the key readings that discuss these salient measurement issues including issues on the correspondence of measures, such as a test of effects of types of correspondence on theory effects in Courneya 1994, and the use of expectancy-value measures of the belief systems that underpin constructs from the theories—such as the critique of expectancy x value models of attitudes, norms, and control in the theory in French and Hankins 2003. In addition, Darker and French 2009 outlines how individuals respond to and interpret scaled questions used to measure theory constructs, while Wood, et al. 2016 demonstrates that responding to measures of theory constructs, like questions on intentions and attitudes, can affect behavior, which is known as the question-behavior, or mere measurement, effect. Taken together these works highlight the salient issues and important consideration when measuring constructs from the theories.

Ajzen, I. 2006. Constructing a TPB questionnaire: Conceptual and methodological considerations. SemanticScholar.

This online resource provided a definitive set of guidelines on how to develop measures from the theories, including the use of open-ended surveys to elicit salient beliefs that are prerequisites to producing the belief-based or indirect measures of theory constructs. Originally printed September 2002.

Courneya, K. S. 1994. Predicting repeated behavior from intention: The issue of scale correspondence. *Journal of Applied Social Psychology* 24.7: 580–594.

DOI: 10.1111/j.1559-1816.1994.tb00601.x

This article addresses the key issue of scale correspondence as a key boundary condition likely to affect relations among constructs in the theory of planned behavior. A study testing effects of variations in scale correspondence on intention-behavior relations is reported. Results indicate that violations of correspondence tended to attenuate intention-behavior relations. Available online by subscription or purchase.

Darker, C. D., and D. P. French. 2009. What sense do people make of a theory of planned behaviour questionnaire? A think-aloud study. *Journal of Health Psychology* 14.7: 861–871.

DOI: 10.1177/1359105309340983

The authors use a unique ‘think-aloud’ technique to examine how individuals respond to scaled measures of the theory constructs. Content analysis of responses identify numerous problems including the potential for measures to introduce new thoughts, similar to the question-behavior effect, and the variability in opinions of salient others when responding to subjective norms questions. Available online by subscription or purchase.

French, D. P., and M. Hankins. 2003. The expectancy-value muddle in the theory of planned behaviour—and some proposed solutions. *British Journal of Health Psychology* 8.1: 37–55.

DOI: 10.1348/135910703762879192

The authors raise important issues relating to the interpretation of expectancy-value models of constructs from the theory of planned behavior, such as the types of response scale used and the testing of expectancy and value interactions. They propose some potential alternative scaling procedures as solutions. Available online by subscription or purchase.

Wood, C., M. T. Conner, T. Sandberg, et al. 2016. The impact of asking intention or self-prediction questions on subsequent behavior: A meta-analysis. *Personality and Social Psychology Review* 20.3: 245–268.

DOI: 10.1177/1088868315592334

Consistent with the extensive literature on the potential for observation to change the phenomenon studied, this meta-analysis demonstrates that completion of measures of intentions and constructs from the theory of planned behavior has positive, but small, effects on behavior. Available online

Extending the Theories

An important feature of the theories of reasoned action and planned behavior is their relative parsimony while simultaneously accounting for substantive variance in behavior across multiple contexts and populations. This simplicity and capacity to explain behavior notwithstanding, there is a general acknowledgement that the theories provide only partial explanations of behavior. There is tacit agreement of the need to extend the theories by including additional constructs or processes with the goal of developing more comprehensive explanations of behavior, with the caveat that such extensions come at the cost of reducing parsimony. Ajzen 1991 (cited under General Overviews) and Ajzen 2011 (cited under Overviews) argue that these costs should be balanced against the relative gains in explaining

behavior. There is recognition that modification and extension of theories is inevitable for progress in understanding. The development of the theory of planned behavior and the reasoned action approach exemplifies this process as they both represent extensions of their predecessors. Overviews provides readings that chart the progress of the theories and summarize developments in theoretical and empirical research that have extended the theories. Subsequent sections provide examples of how theorists and researchers have extended the theories, particularly the theory of planned behavior, by Differentiating Constructs of the theory, augmenting the theory with Additional Constructs, including Personality and Individual Differences, accounting for Past Behavior and Habit, and developing Integrated Approaches that combine the theories with others.

Overviews

The issue of the sufficiency of the theory of planned behavior is explicitly discussed in Ajzen 2011, which outlines the potential value of extending the theory through the inclusion of Additional Constructs and processes that account for unique variance in behavior, or moderate relations between factors. The review articles Conner and Armitage 1998 and Manstead and Parker 1995 focus on the conceptual and empirical bases for adding key constructs in the theories including belief salience, self-efficacy, anticipated regret and moral norms, self-identity, and affective beliefs. Details of research that provides examples of these additions can be found under Differentiating Constructs, Additional Constructs, and Past Behavior and Habit.

Ajzen, I. 2011. The theory of planned behaviour: Reactions and reflections. *Psychology & Health* 26.9: 1113–1127.

DOI: 10.1080/08870446.2011.613995

In this article Ajzen identifies salient issues in the development of the theory of planned behavior in health contexts, and outlines the prerequisite conditions for additional variables to be included in the theory. Available online by subscription or purchase.

Conner, M., and C. J. Armitage. 1998. Extending the Theory of Planned Behavior: A review and avenues for further research. *Journal of Applied Social Psychology* 28.15: 1429–1464.

DOI: 10.1111/j.1559-1816.1998.tb01685.x

This article outlines the conceptual and empirical bases for extending the theory of planned behavior. The inclusion of belief salience, Past Behavior and Habit, moral norms, self-identity, and affective beliefs is considered, as well as making distinctions between perceived controllability and self-efficacy. Available online by subscription or purchase.

Manstead, A., and D. Parker. 1995. Evaluating and extending the theory of planned behaviour. *European Review of Social Psychology* 6.1: 69–95.

DOI: 10.1080/14792779443000012

This article outlines the key conceptual developments in extending the theory of planned behavior, particularly the Measurement of beliefs and the inclusion of affective, control, and personal normative beliefs in the theory. Available online by subscription or purchase.

Differentiating Constructs

Theorists have recognized that the core constructs of the theories of reasoned action and planned behavior should be both conceptually and empirically distinct, and that the constructs themselves could be differentiated into multiple distinct components. Researchers therefore have sought to design studies to test these distinctions, and whether these distinctions have value in accounting for unique variance in intentions and behavior, an important prerequisite for adding constructs. For example, Miniard and Cohen 1981 and Trafimow and Fishbein 1995 test whether people have the capacity to distinguish between attitudes and norms, and Trafimow and Duran 1998 tests whether people can differentiate attitudes and perceived behavioral control. The research supports these distinctions, providing confirmation for attitudes, subjective norms, and perceived behavioral control as distinct constructs. There have been further demonstrations that the constructs within the theory can be differentiated, such as Trafimow and Sheeran 1998, which makes the distinction between the affective and cognitive components of attitudes; Sheeran and Orbell 1999, which differentiates between descriptive and injunctive norms; and Terry and O’Leary 1995 which makes the distinction between perceived controllability and self-efficacy. These distinctions have paved the way for the broader reasoned action approach, which explicitly makes these distinctions clear while at the same time retaining the overarching constructs.

Miniard, P., and J. Cohen. 1981. An examination of the Fishbein-Ajzen intention-behavioral model’s concepts and measures. *Journal of Experimental Social Psychology* 17.3: 309–339.

DOI: 10.1016/0022-1031(81)90031-7

The authors offer a critique of the conceptual and empirical basis of distinguishing between the behavioral and normative sets of beliefs that underpin the attitude and subjective norm constructs in the theory of reasoned action. Their study highlights the empirical consequences of strong relations between the constructs in predicting intention. Available online by subscription or purchase.

Sheeran, P., and S. Orbell. 1999. Augmenting the theory of planned behavior: Roles for anticipated regret and descriptive norms. *Journal of Applied Social Psychology* 29.10: 2107–2142.

DOI: 10.1111/j.1559-1816.1999.tb02298.x

The subjective norms construct encapsulates beliefs in the expectations of significant others. This article expands the normative component of the theory to include descriptive norms, which reflects beliefs in what significant others themselves do, and demonstrates its uniqueness in the prediction of behavior within the theory. Available online by subscription or purchase.

Terry, D. J., and J. E. O’Leary. 1995. The theory of planned behaviour: The effects of perceived behavioural control and self-efficacy. *British Journal of Social Psychology* 34.2: 199–220.

DOI: 10.1111/j.2044-8309.1995.tb01058.x

The authors separate the perceived behavioral control construct into beliefs about controllability and beliefs about agency or capacity, which are aligned with the self-efficacy construct. Each of the components is shown to have independent effects on intentions and behavior. Available online by subscription or purchase.

Trafimow, D., and A. Duran. 1998. Some tests of the distinction between attitude and perceived behavioural control. *British Journal of Social Psychology* 37.1: 1–14.

DOI: 10.1111/j.2044-8309.1998.tb01154.x

This article reports a series of experimental studies that corroborate the distinction between attitudes and perceived behavioral control in the theory of planned behavior, and further supports the independent effects of these constructs in predicting behavior. Available online by subscription or purchase.

Trafimow, D., and M. Fishbein. 1995. Do people really distinguish between behavioural and normative beliefs? *British Journal of Social Psychology* 34.3: 257–266.

DOI: 10.1111/j.2044-8309.1995.tb01062.x

Following the critique of Miniard and Cohen 1981, the authors provide experimental evidence that people can and do make distinctions between attitudes, represented by beliefs about behavior, and subjective norms, represented by normative beliefs, are distinct predictors of intentions and behavior in the theory. Available online by subscription or purchase.

Trafimow, D., and P. Sheeran. 1998. Some tests of the distinction between cognitive and affective beliefs. *Journal of Experimental Social Psychology* 34.4: 378–397.

DOI: 10.1006/jesp.1998.1356

This article reports experimental evidence for distinct affective and cognitive attitude components in the theory of planned behavior. The research indicates that people hold both cognitive beliefs, which reflect the instrumentality of the behavior, and affective beliefs, which reflect their emotive evaluation of the behavior. Available online by subscription or purchase.

Additional Constructs

Numerous extensions of the theories of reasoned action and planned behavior have been proposed, including additional constructs alongside the traditional predictors of intentions and behavior in the theory. These extensions have been advocated by numerous researchers and are consistent with the suggestion in Ajzen 1991 (cited under General Overviews) that the theory is open to the inclusion of additional variables provided they account for additional variance in intentions or behavior once the traditional theory constructs had been accounted for. The theory therefore serves as a flexible framework to explore the effects of multiple social cognitive constructs on intentional behavior. Many of the additional constructs included in the theories have focused on broadening the content of the additional predictors. For example, research has extended the subjective norms component. Specifically, Terry, et al. 1999 includes social identity and group norms; Courneya, et al. 2000 includes social

support; and Godin, et al. 2005 includes moral norms as independent predictors of intention in the theory. Similarly, Rise, et al. 2010 and Rivis and Sheeran 2003 summarize research including self-identity and descriptive norms, respectively, as additional predictors in the theory. In addition, Lawton, et al. 2009 includes affective attitudes, an extension of the attitude construct, as an independent predictor of intentions in theory. There have also been attempts to extend the intention construct. For example, Perugini and Bagozzi 2001 makes the distinction between desires and intentions. There has also been research focusing on including anticipated emotions as predictors of intentions in the theory: Perugini and Bagozzi 2001 and Rivis, et al. 2009 demonstrate that anticipated affect was an independent predictor of intention in the theory, while Sandberg and Conner 2008 summarizes research on the effects of anticipated regret as key independent predictor of intentions. Together these extensions illustrate the importance of additional constructs in accounting for unique variance in intentions and behavior beyond the core theory constructs, and the contexts and conditions in which the effects of these additional constructs are likely to be most pervasive.

Courneya, K. S., R. C. Plotnikoff, S. B. Hotz, and N. J. Birkett. 2000. Social support and the theory of planned behavior in the exercise domain. *American Journal of Health Behavior* 24.4: 300–308.

DOI: 10.5993/AJHB.24.4.6

This article reports a study augmenting the normative component of the theory of planned behavior with social support. Social support was found to be a stronger predictor of intentions and exercise stage than subjective norms. Available online.

Godin, G., M. T. Conner, and P. Sheeran. 2005. Bridging the intention-behaviour “gap”: The role of moral norm. *British Journal of Social Psychology* 44.4: 497–512.

DOI: 10.1348/014466604X17452

This study demonstrates the importance of incorporating moral norms—that is, whether or not doing the behavior is consistent with the individuals’ moral beliefs—into the theory of planned behavior. The intention–behavior relation was stronger among people with high moral norms who construed the behavior in moral terms. Available online by subscription or purchase.

Lawton, R., M. T. Conner, and R. McEachan. 2009. Desire or reason: Predicting health behaviors from affective and cognitive attitudes. *Health Psychology* 28.1: 56–65.

DOI: 10.1037/a0013424

The authors demonstrate the importance of segregating the affective and cognitive components of attitudes across fourteen behaviors. Affective attitudes predicted behavior directly as well as indirectly through intentions for nine behaviors. The authors argue that decisions to act may be based on emotion independent of intentions in some behaviors. Available online by subscription or purchase.

Perugini, M., and R. P. Bagozzi. 2001. The role of desires and anticipated emotions in goal-directed behaviours: Broadening and deepening the theory of planned behavior. *British Journal of Social Psychology* 40.1: 79–98.

DOI: 10.1348/014466601164704

This article identifies desires and anticipated affect as independent predictors of behavior within the theory of planned behavior. Available online by subscription or purchase.

Rise, J., P. Sheeran, and S. Hukkelberg. 2010. The role of self-identity in the theory of planned behavior: A meta-analysis. *Journal of Applied Social Psychology* 40.5: 1085–1105.

DOI: 10.1111/j.1559-1816.2010.00611.x

This meta-analysis summarizes research that has extended the normative component of the theory of planned behavior to encompass self-identity. Self-identity reflects individuals' beliefs that they identify as someone who typically performs the behavior of interest, and this analysis demonstrates that self-identity predicts intentions independent of subjective norms and other constructs in the theory. Available online by subscription or purchase.

Rivis, A., and P. Sheeran. 2003. Descriptive norms as an additional predictor in the theory of planned behaviour: A meta-analysis. *Current Psychology* 22.3: 218–233.

DOI: 10.1007/s12144-003-1018-2

The authors meta-analyze research including descriptive norms as an additional predictor in the theory of planned behavior, and demonstrate across studies that descriptive norms accounts for unique variance in intentions beyond effects of subjective norms. Available online by subscription or purchase.

Rivis, A., P. Sheeran, and C. J. Armitage. 2009. Expanding the affective and normative components of the Theory of Planned Behavior: A meta-analysis of anticipated affect and moral norms. *Journal of Applied Social Psychology* 39.12: 2985–3019.

DOI: 10.1111/j.1559-1816.2009.00558.x

This article reports a meta-analysis of theory of planned behavior studies that included measures of anticipated affect (e.g., regret, exhilaration) and moral norms as predictors of intention and behavior alongside the theory constructs. Affective attitudes and moral norms accounted for unique variance in behavior mediated by intentions across studies. Available online by subscription or purchase.

Sandberg, T., and M. T. Conner. 2008. Anticipated regret as an additional predictor in the theory of planned behaviour: A meta-analysis. *British Journal of Social Psychology* 47.4: 589–606.

DOI: 10.1348/014466607x258704

Anticipated regret, a specific form of anticipated emotion, is demonstrated to be an important additional predictor of intentions and behavior across studies adopting the theory of planned behavior. Available online by subscription or purchase.

Terry, D. J., M. A. Hogg, and K. M. White. 1999. The theory of planned behaviour: Self-identity, social identity and group norms. *British Journal of Social Psychology* 38.3: 225–244.

DOI: 10.1348/014466699164149

The authors present evidence which supports expanding the theory of planned behavior to encompass group-related perceptions from social identity theory. They demonstrate that individuals' beliefs that the behavior is consistent with group norms predicted intentions, but only among individuals that identified with the group. Available online by subscription or purchase.

Personality and Individual Differences

The constructs from the theories of reasoned action and planned behavior, as well as the reasoned action approach, are operationalized as social cognitive beliefs about future participation in a given behavior. They are, therefore, subject to change and modification over time. However, theorists have been interested in the role of individual difference constructs, particularly personality traits, in determining behavior and how they relate to the social cognitive determinants of intentions and behavior in these theories. As individual difference and personality constructs reflect relatively stable, enduring factors that are likely to affect multiple behaviors and operate across multiple constructs, their effects are likely to be modest compared to those that are more proximal and dependent on situational and contextual factors, such as belief-based constructs. Researchers have extended the theories to incorporate traits. Traits have typically been treated as distal determinants of intentions and behavior mediated by the social cognitive constructs in the theory. Traits therefore serve as intrapersonal sources of information for the social cognitive beliefs. Furthermore, direct effects of traits on behavior independent of the social cognitive constructs seem to indicate decisions made independent of cognition. There are also suggestions that particular traits moderate effects among theory constructs, and, therefore act as 'biases' to decision making. Conner and Abraham 2001; Courneya, et al. 1999; and Hoyt, et al. 2009 incorporate traits from the five-factor model of personality, particularly conscientiousness and extroversion, as predictors of the theory of planned behavior constructs. Alongside this research, researchers have also demonstrated how generalized tendencies for intentions to be determined by particular constructs from the theory influence predictions in the theory. For example, Trafimow and Finlay 1996 demonstrates that individuals that base their intentions on subjective norms had stronger effects of subjective norms on intentions in the theory. Sheeran, et al. 2002 finds similar effects for perceived behavioral control. Conner, et al. 2016 demonstrates that individuals who base their intentions on affective attitudes were more likely to act on their intentions. Taken together traits provide important extensions of the theory and illustrate the role of individual differences as distal and moderating influences on theory predictions.

Conner, M. T., and C. Abraham. 2001. Conscientiousness and the theory of planned behavior: Toward a more complete model of the antecedents of intentions and behavior. *Personality and Social Psychology Bulletin* 27.11: 1547–1561.

DOI: 10.1177/01461672012711014

Conscientiousness is found to be a consistent distal predictor of behavior through the theory's constructs and intentions, for health protection and exercise behaviors. A direct effect of conscientiousness was also found for exercise behavior. Available online by subscription or purchase.

Conner, M. T., R. R. C. McEachan, R. J. Lawton, and P. Gardner. 2016. Basis of intentions as a moderator of the intention–health behavior relationship. *Health Psychology* 35.3: 219–227.

DOI: 10.1037/hea0000261

This analysis tested whether intentions based on particular variables within the theory such as instrumental and affective attitudes; anticipated affective reactions; and injunctive, descriptive, and moral norms moderated the relationship between intentions and behavior. The research demonstrated that only individuals who based their intentions on affective attitudes had stronger relations between intentions and behavior. Available online by subscription or purchase.

Courneya, K. S., T. M. Bobick, and R. J. Schinke. 1999. Does the theory of planned behavior mediate the relationship between personality and exercise behavior? *Basic and Applied Social Psychology* 21.4: 317–324.

DOI: 10.1207/S15324834BASP2104_5

This article reports effects of the extroversion, conscientiousness, and neuroticism traits from the five-factor model of personality on behavior through the social cognitive constructs in the theory, but also found direct effects of extroversion on behavior. Available online by subscription or purchase.

Hoyt, A. L., R. E. Rhodes, H. A. Hausenblas, and P. R. Giacobbi Jr. 2009. Integrating five-factor model facet-level traits with the theory of planned behavior and exercise. *Psychology of Sport & Exercise* 10.5: 565–572.

DOI: 10.1016/j.psychsport.2009.02.008

The authors demonstrate that the activity and self-discipline facets of conscientiousness and extroversion from the five-factor model of personality predicted behavior through the social cognitive constructs. Individuals low in the anxiety facet of neuroticism exhibited weaker intention–behavior relations. Available online by subscription or purchase.

Sheeran, P., D. Trafimow, K. A. Finlay, and P. Norman. 2002. Evidence that the type of person affects the strength of the perceived behavioural control-intention relationship. *British Journal of Social Psychology* 41.2: 253–270.

DOI: 10.1348/014466602760060129

A unique within-participants design was used to identify individuals whose intentions are based on perceived behavioral control rather than attitudes and subjective norms. This suggests the importance of tailoring interventions to target particular constructs in the theory for effective behavior change. Available online by subscription or purchase.

Trafimow, D., and K. A. Finlay. 1996. The importance of subjective norms for a minority of people: Between-subjects and within-subjects effects. *Personality and Social Psychology Bulletin* 22.8: 820–828.

DOI: 10.1177/0146167296228005

The authors use a within-participants design to identify normatively-controlled individuals, whose intentions tend to be predominately determined by subjective norms. The research provides evidence that individual differences may explain observed variation in the effects of normative and personal beliefs on intentions and behavior in the theory. Available online by subscription or purchase.

Past Behavior and Habit

The theories of reasoned action and planned behavior, and the reasoned action approach, are all focused on predicting people's future behavior. Tests of the theory typically measure behavior at a later point in time, which should correspond with the time frame referred to in measures of the theory constructs. Inclusion of measures of past behavioral frequency as predictors of subsequent behavior alongside other theory measures enables evaluation of extent to which the theory constructs account for effects of past behavior on subsequent behavior—a test of the sufficiency of the theory. Research such as the meta-analysis Hagger, et al. 2018 demonstrates substantial effects of past behavior on subsequent behavior, and also shown that effects among the theory constructs, particularly the Intention-Behavior Relationship, are reduced in size. Ajzen 2002 suggests that attenuation of model effects could capture the extent to which individuals have formed similar beliefs in the past. Simultaneous effects of theory constructs and past behavior on the theory may indicate different 'pathways' to behavior: a reasoned pathway reflected by the effects of the theory constructs and intentions, and a 'habitual' or 'nonconscious' pathway represented by past behavior effects. Research has suggested that features of the behavior may determine relative strength of intentions and past behavior. Ouellette and Wood 1998, for example, demonstrates that behaviors which individuals have high opportunity to perform, and tend to be performed in stable contexts, are likely to become habitual and less dependent on intentions. Therefore the extent to which individuals' behavior is determined by their past behavior—and, therefore, the sufficiency of the theory—largely depends on the type of behavior, the frequency with which it has been previously performed, and whether it has been performed regularly in stable contexts. Consistent with this research, other studies have shown that past behavior moderates effects of theory variables on behavior, particularly the intention-behavior relationship. For example, Norman, et al. 2000 finds stronger intention-behavior effects with higher past behavior, suggesting greater habitual control over behavior. However, moderator effects have been inconsistent, and Sheeran, et al. 2017 suggests that moderating effects of past behavior in the intention-behavior relationship may be due to a stabilizing effect on intentions in the early stages of behavioral participation, but an attenuating effect after it has been performed regularly. Finally, research such as van Bree, et al. 2015 demonstrates that the effects of past behavior have been shown to be mediated by habit. Importantly, some types of behavior are less subject to past behavior and habitual effects. For example, Bamberg, et al. 2003 demonstrates that past behavior has a modest effect on behavior over time even though the behavior has been repeated frequently.

Ajzen, I. 2002. Residual effects of past on later behavior: Habituation and reasoned action perspectives. *Personality and Social Psychology Review* 6.2: 107–122.

DOI: 10.1207/S15327957PSPR0602_02

Provides explanation of the different processes represented by past behavior effects in the theory of planned behavior. Effects of past behavior mediated by the social cognitive construct and intentions represent the extent to which past experience informs these constructs, and attenuation of model effects reflects previous decision making. Available online by subscription or purchase.

Bamberg, S., I. Ajzen, and P. Schmidt. 2003. Choice of travel mode in the theory of planner behavior: The roles of past behavior, habit, and reasoned action. *Basic and Applied Social Psychology* 25.3: 175–187.

DOI: 10.1207/S15324834BASP2503_01

Reports research in which commuters provided with a travel ticket generally make decisions over time based on intentions and social cognitive constructs from the theory of planned behavior, with effects of past behavior waning over time, and no effect of habit. Available online by subscription or purchase.

Conner, M. T., R. Warren, S. Close, and P. Sparks. 1999. Alcohol consumption and the theory of planned behavior: An examination of the cognitive mediation of past behavior. *Journal of Applied Social Psychology* 29.8: 1676–1704.

DOI: 10.1111/j.1559-1816.1999.tb02046.x

The authors provide a test of the sufficiency of the theory of planned behavior in alcohol consumption. The theory partially accounted for effects of past behavior on subsequent alcohol consumption, but a residual effect remained, reflecting occasions where the behavior is under habitual or nonconscious control. Available online by subscription or purchase.

Hagger, M. S., J. Polet, and T. Lintunen. 2018. The reasoned action approach applied to health behavior: Role of past behavior and test of some key moderators using meta-analytic structural equation modeling. *Social Science & Medicine* 213: 85–94.

DOI: 10.1016/j.socscimed.2018.07.038

A meta-analysis of the reasoned action approach demonstrates both direct and indirect effects of past behavior on behavior across multiple health behaviors, and that effects of intentions, and the effects of attitudes and subjective norms through intentions, are reduced with the inclusion of past behavior. Available online by subscription or purchase.

Norman, P., M. T. Conner, and R. Bell. 2000. The theory of planned behaviour and exercise: Evidence for the moderating role of past behaviour. *British Journal of Health Psychology* 5.3: 249–261.

DOI: 10.1348/135910700168892

The authors show that past behavior moderates the effect of intentions on exercise behavior, providing illustration that routine exercising reduces the effects of intention, and, therefore, reasoned processes, on decisions to exercise. Available online by subscription or purchase.

Ouellette, J. A., and W. Wood. 1998. Habit and intention in everyday life: The multiple processes by which past behavior predicts future behavior. *Psychological Bulletin* 124.1: 54–74.

DOI: 10.1037//0033-2909.124.1.54

Influential meta-analysis demonstrating that effects of intentions on behavior vary depending on whether the behavior has been performed frequently in the past and whether it has been performed in stable, unchanging contexts. The researchers suggest that past behavior provides information on the extent to which behaviors are habitual. Available online.

Sheeran, P., G. Godin, M. T. Conner, and M. Germain. 2017. Paradoxical effects of experience: Past behavior both strengthens and weakens the intention–behavior relationship. *Journal of the Association for Consumer Research* 2.3: 309–318.

DOI: 10.1086/691216

Researchers demonstrate that the moderating effects of past behavior on intention–behavior relations are curvilinear. Effects of intentions are weaker at low and high levels of past behavior, suggesting that experience with the behavior has a stabilizing effect on intentions, but reduces effects of intentions as the behavior becomes more habitual. Available online by subscription or purchase.

van Bree, R. J. H., M. M. van Stralen, A. N. Mudde, C. Bolman, H. de Vries, and L. Lechner. 2015. Habit as mediator of the relationship between prior and later physical activity: A longitudinal study in older adults. *Psychology of Sport and Exercise* 19:95–102.

DOI: 10.1016/j.psychsport.2015.03.006

Research demonstrating that the effect of past behavior on subsequent behavior in the theory of planned behavior is partially mediated by self-reported habit, indicating that the residual effect of past behavior may be partially attributable to habit.

Integrated Approaches

Although the theories of reasoned action and planned behavior have been shown to be adequate in predicting behavior, substantial variance remains unexplained. There are also numerous limitations and boundary conditions of the theories, such as the residual effect of past behavior and inadequacy of the theory constructs to fully encompass all sets of beliefs that may determine behavior, such as the subjective norms construct. Although extending the theory to include Additional Constructs consistent with Ajzen 1991 (cited under General Overviews) has demonstrated utility, researchers have sought to use the theories as a basis for more comprehensive theories that draw from processes and constructs from other theoretical perspectives. Prominent integrated approaches have augmented the theories with individual difference and predisposing factors that serve as antecedents of the social cognitive constructs, and with additional components, such as planning and perceived barriers, that act

as moderators of the intention–behavior relationship (de Vries, et al. 2005). There have also been attempts to include constructs and predictions from dual-process theories of behavior. The theories suggest that behavior is a function of reflective, reasoned decision making, as well as automatic, nonconscious processes that affect behavior beyond an individual’s awareness. In the integrated approach, the social cognitive constructs and their effects from the theory of planned behavior and reasoned action approach represent reflective processes, and the theory is augmented to include constructs and predictions that represent nonconscious, automatic processes. Hagger, et al. 2017 typifies this approach in incorporating a measure of implicit attitudes toward behavior as an independent predictor of behavior in the theory of planned behavior. Research has also extended the theory to include broader perceptions beyond beliefs about behavior. Perugini and Conner 2000 presents an extended model of goal directed behavior, which not only differentiates between desires and intentions, but also incorporates constructs relating to the goals people pursue as a result of the behavior, such as goal feasibility. Consistent with suggestions that the subjective norms construct may be inadequate in accounting for normative influences on behavior, researchers have incorporated numerous additional constructs related to social and normative influences. Fielding, et al. 2008 takes this approach further and incorporates predictions from social identity theory, a prominent approach to group dynamics, into the theory of planned behavior. The research examined key processes relating to typical practices (group norms) and strength of identification with the group (group identification) on relations among theory of planned behavior constructs. A final example of an integrated approach is proposed by Montaña and Kasprzyk 2015 which draws from the theories of reasoned action and planned behavior to present an integrated model. The model accounts for more comprehensive sets of beliefs in the theories based on extensions, and serves as a precursor to the reasoned action approach.

de Vries, H., I. Mesters, H. van de Steeg, and C. Honing. 2005. The general public’s information needs and perceptions regarding hereditary cancer: An application of the Integrated Change Model. *Patient Education and Counseling* 56.2: 154–165.

DOI: 10.1016/j.pec.2004.01.002

An integrated change model is proposed which incorporates constructs and processes from multiple social cognitive, individual difference, motivation, and stage models, with the theory of planned behavior at its root. Available online by subscription or purchase.

Fielding, K. S., D. J. Terry, B. M. Masser, and M. A. Hogg. 2008. Integrating social identity theory and the theory of planned behaviour to explain decisions to engage in sustainable agricultural practices. *British Journal of Social Psychology* 47.1: 23–48.

DOI: 10.1348/014466607x206792

The researchers integrate predictions from social identity theory into the theory of planned behavior in the context of sustainable agricultural processes. Results indicated that individuals who strongly identified with groups using sustainable practices made decisions based on group norms. Available online by subscription or purchase.

Hagger, M. S., N. Trost, J. Keech, D. K. C. Chan, and K. Hamilton. 2017. Predicting sugar consumption: Application of an integrated dual-process, dual-phase model. *Appetite* 116:147–156.

DOI: 10.1016/j.appet.2017.04.032

The authors introduce and test a dual-process, dual-phase model in the context of sugar consumption. The model tests effects of implicit attitudes, representing nonconscious processes, and action planning, representing a volitional phase of action, on intentions and behavior alongside constructs from the theory of planned behavior. Available online by subscription or purchase.

Montaño, D. E., and D. Kasprzyk. 2015. Theory of reasoned action, theory of planned behavior, and the integrated behavioral model. In *Health behavior and health education: Theory, research, and practice*. 5th ed. Edited by K. Glanz, B. K. Rimer, and K. Viswanath, 95–124. San Francisco: Jossey-Bass.

The authors describe the development of an integrated behavioral model resulting from a review of theories and apply it to prevention strategies in people with high HIV risk. The model includes constructs from the theory of planned behavior, with knowledge and skills to perform the behavior, salience of the behavior, environmental constraints, and habit as additional direct predictors of behavior.

Perugini, M., and M. T. Conner. 2000. Predicting and understanding behavioral volitions: The interplay between goals and behaviors. *European Journal of Social Psychology* 30.5: 705–731.

DOI: 10.1002/1099-0992(200009/10)30:5<705::AID-EJSP18>3.0.CO;2-%23

The authors introduce an extended model of goal-directed behavior, which not only distinguishes between desires and intentions, but also includes constructs relating to goal pursuit, particularly goal desires and goal feasibility. They demonstrate that goal desires are independent predictors of desire to perform the behavior, and that goal feasibility is a determinant of perceived control over the behavior.

Critiques and Commentaries

The theories of reasoned action and planned behavior, as well as the reasoned action approach, have demonstrated utility in identifying the social cognitive determinants of behavior; accounted for considerable variance in behavior across multiple behaviors, contexts, and populations; demonstrated flexibility in accounting for other constructs and processes; and helped inform the development of behavior change interventions. There have, however, been numerous critiques of the theory. This section contains articles that have criticized the theory, and the accompanying responses to the critiques, as well as articles that offer different perspectives on the theory and its application. Prominent critiques of the theory are found in Ogden 2003, Weinstein 2007, and Sniehotta, et al. 2014. Ogden 2003 identifies problems with falsifiability of the theory and, recognizing that some of the effects in the model are often not found in empirical tests, asks what sort of data is needed to reject the theory. Weinstein 2007 suggests that correlational predictive studies, even those predicting behavior over time, offer very limited evidence to support the theory, and the lack of experimental data is important. Sniehotta, et al. 2014 acknowledges the contribution that the theory has made to advancing understanding of behavior, but also identifies a series of limitations including those raised by Ogden and Weinstein, as well as the lack of utility of the theory in informing interventions to change behavior. Sniehotta even goes as far as to suggest

that the theory should be ‘retired’. Ajzen and Fishbein 2004 and Ajzen 2015 respond directly to Ogden and Sniehotta’s criticisms, along with numerous other theorists. The general consensus is that the theory, and empirical evidence for the theory, is evolving to address the shortcomings. Head and Noar 2014 raises important issues regarding how to progress theories such as the reasoned action approach, particularly on issues such as specifying theoretical domains, generalizability and utility, the validity of including of Additional Constructs, and how organizations should track change in theories to inform interventions. Trafimow 2009 and Trafimow 2012 present an interesting counterpoint to criticisms on falsifiability indicating that the theory of reasoned action stands up to ‘reasonable standards’ of falsification, and also outline the importance of considering auxiliary assumptions when testing the theory. Taken together, these perspectives epitomize taking a critical approach when evaluating theory, and identify how these debates have utility in raising questions regarding current thinking and setting the agenda for future theory development and directions for subsequent research.

Ajzen, I. 2015. The theory of planned behavior is alive and well, and not ready to retire. *Health Psychology Review* 9.2: 131–137.

DOI: 10.1080/17437199.2014.883474

In this commentary, Ajzen responds directly to the critique of Sniehotta, et al. 2014 and provides suggestions on how the theory has been effective in predicting behavior, is not static but takes into account feedback and change in its focal constructs, and can be used successfully as a basis for behavior change interventions. Available online by subscription or purchase.

Ajzen, I., and M. Fishbein. 2004. Questions raised by a reasoned action approach: Comment on Ogden (2003). *Health Psychology* 23.4: 431–434.

DOI: 10.1037/0278-6133.23.4.431

The authors respond to the issues raised by Ogden with respect to the theory of planned behavior, and assert how the theory can be tested and falsified and how features of the behavior, context, and population may affect the relative strength of the theory components on behavior. Available online by subscription or purchase.

Head, K. J., and S. M. Noar. 2014. Facilitating progress in health behaviour theory development and modification: The reasoned action approach as a case study. *Health Psychology Review* 8.1: 34–52.

DOI: 10.1080/17437199.2013.778165

The authors provide a wide-ranging commentary on the theories applied to health behavior, with the reasoned action approach as an example. They cover the importance of clarifying the theoretical domain for theories, prioritizing utility over generalizability, modifying the theory on the basis of performance across multiple studies, and adopting a consensus approach to theory development. Available online by subscription or purchase.

Ogden, J. 2003. Some problems with social cognition models: A pragmatic and conceptual basis. *Health Psychology* 22.4: 424–428.

DOI: 10.1037/0278-6133.22.4.424

In this critique, the author outlines problems with the theory, particularly with respect to its falsifiability, and proposes the theory is too general to be practicable, and that relations among constructs reflect analytic ‘truths’ that are correct by definition rather than through exploration. Available online by subscription or purchase.

Sniehotta, F. F., J. Pesseau, and V. Araújo-Soares. 2014. Time to retire the Theory of Planned Behaviour. *Health Psychology Review* 8.1: 1–7.

DOI: 10.1080/17437199.2013.869710

The authors provide a wide-ranging critique of the theory of planned behavior, claiming that it does not sufficiently account for effects of multiple extraneous factors and that it lacks utility in informing interventions. The authors advocate the generation of new theories that incorporate components free from assumptions and are testable experimentally. Available online by subscription or purchase.

Trafimow, D. 2009. The theory of reasoned action: A case study of falsification in psychology. *Theory & Psychology* 19.4: 501–518.

DOI: 10.1177/0959354309336319

The author provides informative commentary on claims the theory of reasoned action is not falsifiable by demonstrating that the theory makes ‘risky predictions,’ which are likely to be wrong if the theory is wrong, such as the distinction between attitudes and subjective norms, and demonstrates how these have been confirmed experimentally. The author also comments on the importance of specifying auxiliary assumptions on which theory predictions are conditional when testing predictions. Available online by subscription or purchase.

Trafimow, D. 2012. The role of auxiliary assumptions for the validity of manipulations and measures. *Theory & Psychology* 22.4: 486–498.

DOI: 10.1177/0959354311429996

Treatise on the importance of taking auxiliary assumptions into consideration when evaluating the validity of measures from the theory of planned behavior and evidence for its falsification. Available online by subscription or purchase.

Weinstein, N. D. 2007. Misleading tests of health behavior theories. *Annals of Behavioral Medicine* 33.1: 1–10.

DOI: 10.1207/s15324796abm3301_1

This article highlights the inherent limitations in correlational studies as a means to provide evidence to support social cognitive theories like the theories of reasoned action and planned behavior. The author highlights the importance of experimental and quasi-experimental research to confirm predictions among theory constructs and behavior. Available online by subscription or purchase.

Interventions and Behavior Change

Can the theories of reasoned action and planned behavior, and the reasoned action approach, inform campaigns and initiatives to change behavior? A key critique of the theories, outlined in the previous section, is their lack of utility as a basis for behavior change interventions. The lack of utility is also compounded by an evidence base rife with correlational designs in which intervention and experimental research is underrepresented. However, evidence is accumulating that manipulations and intervention strategies that target change in the constructs from the theories do affect change in behavior. This section contains studies that outline such applications of the theories to changing behavior. Hardeman, et al. 2002 suggests that some interventions based on the theory can be effective in changing intentions and behavior, but with small effect sizes, and studies do not often provide clear descriptions or explanations of how the theory was applied in developing the reported intervention. Ajzen and Manstead 2007 outlines conceptual and theoretical bases of how the theories can be used to inform interventions. Examples of primary research testing effects of theory-based interventions and field experiments and experiments in changing behavior, such as Montanaro and Bryan 2014; Montanaro, et al. 2018; and Sniehotta 2009, are outlined. This section also reports research that has synthesized experimental and intervention evidence on the theories applied to behavior change, such as Albarracín, et al. 2005; Sheeran, et al. 2016; Tyson, et al. 2014; and Webb and Sheeran 2006. Importantly, it also includes research reports that have identified the specific behavior change methods or strategies that have been useful in changing constructs from the theory. For example, the meta-analysis Steinmetz, et al. 2016 and the experiment Montanaro, et al. 2018 identify persuasion, provision of information, and behavioral skills training as key theory-based behavior change strategies. Experimental and intervention research based on the theories have generally shown effects on changing the targeted constructs and behavior; such effects, however, are highly variable. The field is moving toward identifying and refining the specific methods that target change in the constructs, and testing their effectiveness in changing behavior.

Ajzen, I., and A. S. R. Manstead. 2007. Changing health-related behaviors: An approach based on the theory of planned behavior. In *The scope of social psychology: Theory and applications*. Edited by K. van den Bos, M. Hewstone, J. de Wit, H. Schut, and M. Stroebe, 43–63. New York: Psychology Press.

This article summarizes basic research on the theory of planned behavior as a basis for intervention design, and highlights the role of the theory in identifying the specific beliefs relevant to the behavior, context, and population that should be targeted in interventions. They also identify that the theory itself does not specify how the beliefs could be changed.

Albarracín, D., J. C. Gillette, A. N. Earl, L. R. Glasman, M. R. Durantini, and M. H. Ho. 2005. A test of major assumptions about behavior change: A comprehensive look at the effects of passive and active HIV-prevention interventions since the beginning of the epidemic. *Psychological Bulletin* 131.6: 856–897.

DOI: 10.1037/0033-2909.131.6.856

A meta-analysis of the effectiveness of intervention strategies used to prevent HIV is presented. The researchers demonstrate that interventions targeting constructs from the theories of reasoned action and planned behavior have utility, particularly those using

arguments targeting attitudes and behavioral skills. Available online by subscription or purchase.

Hardeman, W., M. Johnston, D. W. Johnston, D. Bonetti, N. J. Wareham, and A. L. Kinmonth. 2002. Application of the theory of planned behaviour change interventions: A systematic review. *Psychology and Health* 17.2: 123–158.

DOI: 10.1080/08870440290013644a

Systematic review of interventions aimed at changing health behavior based on the theory of planned behavior. Findings indicate that the theory constructs are usually used as process and outcome variables rather than as a basis for interventions, and that only half of the interventions reported change in intentions, and two-thirds change in behavior, with typically small effect sizes. Available online by subscription or purchase.

Montanaro, E. A., and A. D. Bryan. 2014. Comparing theory-based condom interventions: Health belief model versus theory of planned behavior. *Health Psychology* 33.10: 1251–1260.

DOI: 10.1037/a0033969

Important study demonstrating that an intervention based on the theory of planned behavior was effective in changing condom use relative to a control group and an intervention based on an alternative theory, the health behavior model. The study also demonstrated attitude and self-efficacy change concurrent with behavior change. Available online by subscription or purchase.

Montanaro, E. A., T. S. Kershaw, and A. D. Bryan. 2018. Dismantling the theory of planned behavior: Evaluating the relative effectiveness of attempts to uniquely change attitudes, norms, and perceived behavioral control. *Journal of Behavioral Medicine* 41.6: 757–770

DOI: 10.1007/s10865-018-9923-x

The authors report an experiment testing whether interventions changing each construct from the theory of planned behavior were more effective in changing risky sexual behaviors independently, or in combination. The study demonstrated that although the intervention targeting all constructs was more effective in intention change, the individual constructs were more effective in changing behavior. Available online by subscription or purchase.

Sheeran, P., A. Maki, E. Montanaro, et al. 2016. The impact of changing attitudes, norms, and self-efficacy on health-related intentions and behavior: A meta-analysis. *Health Psychology* 35.11: 1178–1188.

DOI: 10.1037/hea0000387

A meta-analysis of experimental studies targeting change in each of the constructs from the theory of planned behavior is reported. Interventions changed each of the target constructs and, importantly, led to changes in behavior. Available online by subscription or purchase.

Sniehotta, F. F. 2009. An experimental test of the Theory of Planned Behavior. *Applied Psychology: Health and Well-Being* 1.2: 257–270.

DOI: 10.1111/j.1758-0854.2009.01013.x

The author presents a full experimental test of the theory of planned behavior, manipulating each theory construct individually and in combination. Only the manipulation of control beliefs resulted in behavior change, and other than an effect of the behavioral belief manipulation on attitudes, no other effects were found. Available online by subscription or purchase.

Steinmetz, H., M. Knappstein, I. Ajzen, P. Schmidt, and R. Kabst. 2016. How effective are behavior change interventions based on the Theory of Planned Behavior? A three-level meta-analysis. *Zeitschrift Fur Psychologie* 224.3: 216–233.

DOI: 10.1027/2151-2604/a000255

Interventions based on the theory of planned behavior were meta-analyzed. Results revealed overall effects of the interventions on changes in the theory constructs and behavior, and that persuasion, planning, skills provision, and information provision methods changed individual theory constructs but not behavior. Available online by subscription or purchase.

Tyson, M., J. Covey, and H. E. S. Rosenthal. 2014. Theory of planned behavior interventions for reducing heterosexual risk behaviors: A meta-analysis. *Health Psychology* 33.12: 1454–1467.

DOI: 10.1037/hea0000047

A meta-analysis of interventions based on the theory of planned behavior on sexual risk-taking behavior among heterosexuals. Results demonstrated effects of interventions on theory constructs and risk-taking behaviors, although effects were small and highly variable across studies. Available online by subscription or purchase.

Webb, T. L., and P. Sheeran. 2006. Does changing behavioral intentions engender behavior change? A meta-analysis of the experimental evidence. *Psychological Bulletin* 132.2: 249–268.

DOI: 10.1037/0033-2909.132.2.249

A meta-analysis of studies targeting change in behavioral intentions, mainly based on the theories of reasoned action and planned behavior, is presented. Results indicated that that interventions led to significant changes in intentions and behavior, but the changes in intentions were much larger than changes in behavior. Available online by subscription or purchase.