

Framing Unplanned Pregnancy Decision Making within the Theory of Planned Behavior

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ABSTRACT: What factors are associated with a decision to carry an unplanned pregnancy to term? In this paper I frame this question within what is called the Theory of Planned Behavior. This theory has been used in hundreds of investigations to conceptualize, measure, and influence attitudes toward a particular behavior, subjective norms surrounding the behavior, perceptions of control over the behavior, intentions regarding the behavior, and the behavior itself. In this paper I review this theory, apply it to understanding unplanned-pregnancy decision-making, and explore the potential implications of this approach for unplanned-pregnancy decision-making interventions, pro-life strategic initiatives, and pro-life-pro-choice dialogue.

UNPLANNED PREGNANCY is common, and its most common outcome is elective abortion. Worldwide in 2008, 41% of all pregnancies were unintended, and 49%, 39%, and 12% of these unintended pregnancies ended in abortion, birth, and miscarriage, respectively.¹ Why do nearly half of all unplanned pregnancies end in abortion?

A culture hostile to life is undoubtedly the answer to this question, but the individual decision to continue or to end a pregnancy remains the most immediate factor affecting the life of a woman's unborn child. For this reason alone (and there are many others), understanding the structure and processes involved in that decision is critical for anyone engaged in promoting the sanctity of human life and the well-being of women. Toward that end I apply a well-developed and strongly empirically-grounded psychological theory of behavior known as the Theory of Planned Behavior (hereafter, TPB)² as a

¹ S. Singh, G. Sedgh, & R. Hussain, "Unintended Pregnancy: Worldwide Levels, Trends, and Outcomes," *Studies in Family Planning* 41 (2010): 241-50.

² I. Ajzen, "The Theory of Planned Behavior," *Organizational Behavior and Human Decision Processes* 50 (1991): 179-211. See also I. Ajzen, "The Theory of Plan-

framework for applied research intended to better understand and positively influence unplanned-pregnancy decision-making (hereafter, UPDM). In hundreds of investigations, TPB has been successful in conceptualizing, predicting, and influencing decision-making in a host of domains and has achieved this success by highlighting a person's beliefs as related to their behaviors and behavior intentions, including their personal attitudes toward the behavior, subjective norms surrounding the behavior and perceptions of control over the behavior. Applying this framework to UPDM promises to yield a fruitful means of furthering actionable knowledge helpful to those engaged in promoting a culture of life in a variety of arenas and at a variety of levels.

In this paper I first explore the approach and aims of applied research in UPDM and examine reasons why we should use TPB for such a project. I then review the theory and practically illustrate TPB variables and relationships by presenting questionnaire items that would likely be used for potential research, and then point to potential UPDM interventions. Finally I examine the potential implications of this approach for pro-life strategic initiatives.

Approach and Aim

The approach taken is at the level of the individual and recognizes the primacy of the decision. That is, the individual's act of choosing is considered the proximal cause of the act of carrying or aborting. Higher-level cultural, economic, legal, organizational, group, and relational forces are indeed powerful, but they must necessarily operate via individual choice episodes. Whether abortion is government-funded or constitutionally banned are influential but ultimately distal forces. The battle, in its most immediate sense, is waged within the person. Recognition of this situation compels us to seek a valid, systematic, and actionable understanding of the dynamics of the decision itself.

The primary aim of proposing a theoretical framework for UPDM in this essay is to facilitate a productive *agenda* of applied research. A sound theoretical framework guides a sound research agenda.³ A theory provides a

ned Behavior" in *Handbook of Theories of Social Psychology*, ed. P.A.M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Thousand Oaks CA: Sage, 2012), v. 1, pp. 438-59.

³ G. Salomon, "Basic and Applied Research in Psychology: Reciprocity between Two Worlds," *International Journal of Psychology* 22 (1987): 441-46. doi:10.1080/00207598708246785.

systematic conceptualization of important categories, clarifies gaps, and contradictions in current understanding. It provides a foundation for the accrual of knowledge over time and brings to mind actionable means of knowledge discovery. It is not optional. Well-intended efforts, unless informed by valid knowledge, risk being neutral in effectiveness or even counter-productive. Productive applied research should be a readily identifiable component of any serious effort for positive change. This is not to downplay the role of other sources of knowledge (intuition, historical experience, moral conviction, insight, logical deduction) but to give empirical data gained from theory-based applied research an appropriate place.

Why use TPB to Understand UPDM?

UPDM should be approached using TPB for several reasons. First, TPB is a theoretically well-developed and empirically well-founded model.⁴ TPB has been effectively applied to understand, predict, and influence a wide variety of behaviors, including exercise,⁵ food choice and nutrition-related behaviors,⁶ innovation adoption,⁷ ecstasy use,⁸ smoking,⁹ sexual behavior,¹⁰

⁴ See Ajzen (2012); C.J. Armitage & M. Conner, "Efficacy of the Theory of Planned Behaviour: A Meta-Analytic Review," *British Journal of Social Psychology* 40 (2001): 471-99.

⁵ See D.S. Downs & H.A. Hausenblas, "The Theories of Reasoned Action and Planned Behavior Applied to Exercise: A Meta-Analytic Update," *Journal of Physical Activity and Health* 2 (2005): 76-97. See also A.M.L. Husebø, S.M. Dyrstad, J.A. Søreide, & E. Bru, "Predicting Exercise Adherence in Cancer Patients and Survivors: A Systematic Review and Meta-Analysis of Motivational and Behavioural Factors," *Journal of Clinical Nursing* 22 (2013): 4-21.

⁶ See M.S. McDermott, M. Oliver, A. Svenson, T. Simnadis, E.J. Beck, T. Coltman, and R. Sharma, "The Theory of Planned Behaviour and Discrete Food Choices: A Systematic Review and Meta-Analysis," *International Journal of Behavioral Nutrition and Physical Activity* 12 (2015): 1-11. See also S.K. Riebl, P.A. Estabrooks, J.C. Dunsmore, J. Savla, M.I. Frisard, A.M. Dietrich, and B.M. Davy, "A Systematic Literature Review and Meta-Analysis: The Theory of Planned Behavior's Application to Understanding and Predicting Nutrition-Related Behaviors in Youth," *Eating behaviors* 18 (2015): 160-78.

⁷ R.E. Overstreet, C. Cegielski, & D. Hall, "Predictors of the Intent to Adopt Preventive Innovations: A Meta-Analysis," *Journal of Applied Social Psychology* 43 (2013): 936-46.

⁸ G.J.Y. Peters, G. Kok, & C. Abraham, "Social Cognitive Determinants of Ecstasy Use to Target in Evidence-Based Interventions: A Meta-Analytical Review,"

workplace aggression,¹¹ and medical treatment adherence.¹² Behaviors related to health have been of particular interest to TPB researchers. A meta-analysis of 237 prospective tests from 206 articles investigating a range of health behaviors (e.g., physical activity, dietary behaviors) found that TPB provided strong explanatory and predictive efficacy.¹³ Simply stated, TPB is very good at explaining and predicting a large number of behaviors.

Second, TPB theory and applied research interventions are readily accessible by non-experts. Numerous online and printed instructional literature and materials are widely and easily available.¹⁴ Small or large organizations devoted to helping women in unplanned pregnancy contexts can therefore possess confidence in their ability to effectively use TPB to achieve a better understanding of UPDM. This brief paper is itself intended as a short primer in the use of TPB.

Third, because TPB makes salient key beliefs related to the attitudes, social pressures, and perceived ability to enact the behavior from the perspective of the decision-maker, the use of TPB in the UPDM context would yield a richer and fuller understanding of a woman's phenomenological experience of an unplanned pregnancy. TPB can therefore more powerfully clue us into the experience of UPDM from the point of view of the woman. Beyond intellectual knowledge, this "clueing in" is intrinsically desirable for reasons of empathic concern, reflecting a genuine and incarnational approach to

Addiction 103 (2008): 109-18.

⁹ G. Topa & J.A. Moriano, "Theory of Planned Behavior and Smoking: Meta-Analysis and SEM Model," *Substance Abuse and Rehabilitation* 1 (2010): 23-33.

¹⁰ D. Koniak Griffin, J. Lesser, G. Uman, & A. Nyamathi, "Teen Pregnancy, Motherhood, and Unprotected Sexual Activity," *Research in Nursing & Health* 26 (2003): 4-19.

¹¹ J.H. Neuman & R.A. Baron, "Workplace Violence and Workplace Aggression: Evidence concerning Specific Forms, Potential Causes, and Preferred Targets," *Journal of Management* 24 (1998): 391-419.

¹² A. Rich, K. Brandes, B. Mullan, & M.S. Hagger, "Theory of Planned Behavior and Adherence in Chronic Illness: A Meta-Analysis," *Journal of Behavioral Medicine* 38 (2015): 673-88. doi:10.1007/s10865-015-9644-3.

¹³ R.R.C. McEachan, M. Conner, N.J. Taylor, & R.J. Lawton, "Prospective Prediction of Health-Related Behaviours with the Theory of Planned Behaviour: A Meta-Analysis," *Health Psychology Review* 5 (2011): 97-144.

¹⁴ See, e.g., explanations, design instructions and samples at <http://people.umass.edu/aizen/tpb.html>.

understanding.

Overview of TPB

TPB presents a systematic conceptualization of an intuitively appealing understanding of our actions as a consequence of our rational faculties. This is to say that our behavior tends to follow from our behavior-relevant thoughts, emotions and expectations.¹⁵ In this sense, TPB is a *reasoned action* approach, and in fact an earlier version was entitled the *Theory of Reasoned Action* (TRA).¹⁶ Behavior is “planned” and action is “reasoned” not in the sense that they are products of cool analytical deduction and calculation, but rather that behaviors follow from *beliefs*. TPB might be more aptly named "Theory of Belief-Based Behavior." Behavior may indeed be directed by motivations that are quite hot, but even hotly motivated actions are a consequence of beliefs about that behavior.

Figure 1 presents a diagram of the model’s component variables and relationships. The variables (described more fully below) consist of the behavior in question, the person’s intention to perform the behavior, the person’s attitude toward (positive or negative evaluation of) the behavior, their subjective norm (the perception of social expectations) regarding their performance of the behavior, and their perceived behavioral control (their perception of their ability to perform the behavior). Relationships between these variables are indicated by straight single-headed arrows or curved double-headed arrows. Straight arrows signify causal relationships, for example, the arrow from behavior intention to behavior means that the intention to enact a behavior causes the behavior; another way of saying this is that behavior intention is an *antecedent* of behavior. Curved arrows signify correlation, for example, the curved arrow joining attitude toward behavior and subjective norm signify that the two are associated with one another (i.e., having a positive attitude toward a behavior is typically accompanied by a perception of social expectations to perform the behavior).

As Figure 1 indicates, the straight arrows are either pointing to behavior or behavior intention. TPB thus consists of two connected sub-models, one about the antecedents of behavior, and the other about the antecedents of

¹⁵ See Ajzen (1991).

¹⁶ M. Fishbein & I. Ajzen, *Predicting and Changing Behavior: The Reasoned Action Approach* (Taylor & Francis, 2011).

behavior intention. I consider each in turn.

Antecedents of Behavior

First, behavior is a function of the intention to perform that behavior and *actual* behavioral control (the person's true ability to perform the behavior), but because actual behavioral control cannot usually be measured, the proxy *perceived* behavioral control is placed in its stead. This substitution is signified in Figure 1 by the dashed arrow linking perceived behavioral control and behavior. This elegant conceptualization of the antecedents of behavior takes into account our volitional commitment to act and our ability to carry out this commitment. The act of carrying out my exercise routine each day depends both on my intention to exercise each day (behavior intention) and my actual ability to exercise each day (actual behavioral control). The latter may depend on environmental factors such as the availability of the proper exercise equipment or the extent to which I in fact govern my own schedule. Perceived behavioral control is typically thought to be well calibrated with actual behavioral control, as people often seem to have a grasp of the environmental factors that either facilitate or hinder the behavior.

Evidence supports the idea that behavior intention and perceived behavioral control each predict behavior. In a meta-analysis of 185 studies examining a variety of behaviors, behavior intention was strongly ($r_{AVG} = .47$),¹⁷ and perceived behavioral control was moderately ($r_{AVG} = .37$), correlated with behavior.¹⁸

Antecedents of Behavior Intention

Second, the intention to perform a behavior is a function of attitude toward the behavior, subjective norm toward the behavior, and perceived behavioral control. This (also elegant) conceptualization of the antecedents of behavior

¹⁷ The r statistics reported in this manuscript are Pearson correlation coefficients, whose absolute value can vary between 0.00 – signifying no association between two variables, and 1.00 – signifying a perfect association; Correlations of .50, .30, and .10 are typically considered strong, moderate and weak, respectively. See J. Cohen, "Statistical Power Analysis," *Current Directions in Psychological Science* 1 (1992): 98-101.

¹⁸ See Armitage & Conner (2001). See also T.J. Madden, P.S. Ellen, & I. Ajzen, "A Comparison of the Theory of Planned Behavior and the Theory of Reasoned Action," *Personality and Social Psychology Bulletin* 18 (1992): 3-9.

intention takes into account elements related to the person's individual stance toward an action, the social pressures related to the action, and their expectations about being able to perform the action. My intention to exercise each day depends in part on my overall evaluation of exercising (attitude toward the behavior), my perceptions of social pressures regarding my exercising (subjective norm), and my perceptions about my ability to exercise (perceived behavioral control). A person with a positive attitude toward exercising, important others who strongly desire that they exercise, and a strong sense that they are able to exercise will likely make a volitional commitment to exercise. Examining Figure 1, note that these factors can be said to affect behavior indirectly through behavior intention and that they tend to be correlated with one another.

Evidence supports TPB's proposed antecedents to behavior intention. The 185-study meta-analysis mentioned above found that attitude toward behavior was strongly ($r_{AVG} = .49$), subjective norm was moderately ($r_{AVG} = .34$), and perceived behavioral control was strongly ($r_{AVG} = .43$) correlated with behavior intention.

Theory of Reasoned Action

The earlier version of TPB – the Theory of Reasoned Action (hereafter, TRA) – did not include perceived behavioral control.¹⁹ That is, TRA posited that behavior was caused by behavior intention and that behavior intention followed from attitude toward the behavior and subjective norm about the behavior. The later inclusion of the concepts of actual and perceived behavioral control expanded the scope of the model to accommodate constraints on the intention-behavior relationship (e.g., despite my intentions, obstacles may prevent the behavior), and the influence of perceptions of control on intention (e.g., thinking that I cannot perform the behavior forestalls or reduces any intention to perform the behavior).²⁰

Application to UPDM

In this section I apply TPB to UPDM. I first review the very small pool of studies that have framed UPDM using TPB or TRA. I then consider each of the variables and antecedent relationships using questionnaire items that would

¹⁹ Ajzen (1991).

²⁰ See Madden (1992).

likely be used for potential research. This consideration will have a practical flavor. The presentation of questionnaire items is intended to clarify conceptions of TPB, serve as a platform to expand our understanding of UPDM, and exemplify the ease by which TPB may be employed in this domain.

TPB and TRA in UPDM Literature

Surprisingly, a search of social science and medical literature indexes found no published studies using TPB as a framework for abortion (vs. continuing the pregnancy) behavior and only one older study used TRA for this purpose.²¹ This study used a sample of 136 women seeking pregnancy tests, 59 of whom were pregnant, and found strong support for TRA relationships. Having an abortion was nearly perfectly predicted by abortion intention ($r = .96$), and this intention was strongly predicted by (a negative) attitude toward having children ($r = -.56$), attitude toward abortion ($r = .50$), and subjective norm ($r = .68$). Two other published studies have investigated hypothetical abortion intentions (e.g., "if you became pregnant...") among non-pregnant women and both found generally good support for TPB or TRA. In a recent investigation of the antecedents of behavior intentions using a sample of 310 Koreans in their 20s, all three antecedents to behavior intention predicted abortion intention and multi-child intention.²² Also, a study using rural Chinese women found that subjective norm for son preference predicted sex-selection abortion intention.²³

Behavior & Predictors of Behavior

In order to further explore the nature of each variable and convey a practical sense of how this research might proceed, in the next three sections I illustrate how each variable might be measured using self-report questionnaire

²¹ J.G. Smetana & N.E. Adler, "Fishbein's Value x Expectancy Model An Examination of Some Assumptions," *Personality and Social Psychology Bulletin* 6 (1980): 89-96.

²² J.-K. Lee, S.-S. Park, & H.-E. Kim, "A Study on Abortion and Multi-Child Birth Intention among the Unmarried in their 20s: Focusing on the Viewing Hours of TV Program Genres and the Variables of the Theory of Planned Behavior," *Media, Gender & Culture* 17 (2011): 43-79.

²³ X. Yang & G. Einstein, "The Impact of Subjective Norms on the Intention to Select Fetal Sex in Rural China," *Women's Studies International Forum* 44 (2014): 69-79. doi:10.1016/j.wsif.2013.09.004.

items. The items are written for respondents who are women experiencing unplanned pregnancies. With the exception of the behavior question, respondents would rate all items on a 7-point scale (i.e., 1 2 3 4 5 6 7, or 1...7). Unless otherwise indicated, respondents would rate their level of agreement with each item presented below on a 7-point agreement scale, that is, 1 = Strongly Disagree to 7 = Strongly Agree. Items followed by an asterisk (*) are meant to signify reverse-scoring (e.g., replace 7 with 1, 6 with 2, etc.).

Behavior (B). Behavior is the specific action of interest and is typically measured separately from all other questions after a preset period of time has elapsed to assess the extent to which the behavior was performed (e.g., three months after the initial questionnaire on exercising, respondents would be contacted regarding the extent to which they exercised). With regard to UPDM, the respondent would be contacted at some point in the future, either when the pregnancy was carried to term, miscarried or aborted, and asked:

1. I did/did not continue this pregnancy to term.
2. (Answer if you responded “did not” in the last question): I did/did not have an abortion.

In the remaining example items I have framed the behavior of interest in a positive way using the stem “continue this pregnancy” but it could have been framed negatively using “have an abortion.” I have done this with the aim of more clearly assessing and exploring variables and beliefs associated with carrying a pregnancy to term, which I speculate to be less well considered by women experiencing unplanned pregnancy.

Behavior Intention (BI). Behavior intention is the extent to which the action is intended or planned. A set of four agreement items may be used for this purpose:

1. I intend to continue this pregnancy.
2. I expect to continue this pregnancy.
3. I plan to continue this pregnancy.
4. I will be continuing this pregnancy.

Higher average responses to BI items (e.g., 6.5) would signify a strong, and lower averages (e.g., 2.0) a weak, intention to continue. Because the commitment to a goal in general directs, energizes, maintains and organizes goal-

directed behavior and thereby facilitates goal-attainment,²⁴ the behavior intention to continue a pregnancy (i.e., give birth) should facilitate the behavior of giving birth. This is especially so if *implementation intentions* (i.e., “If situation Y is encountered, then I will initiate goal directed behavior X!”) are formulated in advance.²⁵

Actual Behavioral Control. Actual behavioral control is the degree to which individuals can actually carry out their behavior intention. Actual behavioral control is represented by proxy through perceived behavioral control (described below), and so to the extent that PBC is well-calibrated with actual behavioral control, it should also predict the behavior of continuing the pregnancy. Actual behavioral control in UPDM refers to the environmental factors and circumstances that in reality facilitate rather than hinder continuing a pregnancy. Actual behavioral control is typically not measurable, but in UPDM contexts, it is instructive to consider how we might measure it. Actual behavioral control might be assessed by another person using the following items:

1. In actual fact, she can continue this pregnancy if she wanted to.
2. In actual fact, continuing this pregnancy would be difficult for her.*
3. In actual fact, the decision to continue this pregnancy is beyond her control.*
4. In actual fact, whether or not she continues this pregnancy is entirely up to her.

There are many areas in the world, of course, where abortion is forced (e.g., sex-selection abortions in China and India)²⁶ and this constitutes a potent obstacle to control over continuing one’s pregnancy, thereby decreasing the

²⁴ E.A. Locke & G.P. Latham, "Building a Practically Useful Theory of Goal Setting and Task Motivation: A 35-year Odyssey," *American Psychologist* 57 (2002): 705.

²⁵ P.M. Gollwitzer & P. Sheeran, "Implementation Intentions and Goal Achievement: A Meta-Analysis of Effects and Processes" in *Advances in Experimental Social Psychology*, vol. 38, ed. M.P. Zanna (San Diego CA: Elsevier, 2006), pp. 69-119.

²⁶ C.T. Coyle, M.W. Shuping, A. Speckhard, & J.E. Brightup, "The Relationship of Abortion and Violence against Women: Violence Prevention Strategies and Research Needs," *Issues in Law & Medicine* 30 (2015): 111-27.

birth-rate regardless of intention. Conversely, control factors that actually make it easier to continue a pregnancy, (e.g., job security during pregnancy)²⁷ or harder to discontinue a pregnancy (e.g., lack of abortion availability)²⁸ should increase the birth-rate.

Direct Measurement of ATB, SN and PBC

Within TPB, each of the three predictors of behavior intention (i.e., attitude toward behavior, subjective norm, and perceived behavioral control) may be measured either directly or indirectly. Direct measurement uses items straightforwardly assessing the predictor and will be presented here. Indirect measurement consists of assessing the underlying beliefs that lead to each predictor and will be presented in the next section.

Attitude toward Behavior (ATB). A person's attitude toward a behavior is their overall evaluative stance toward the behavior. This may be measured directly, as presented here:

Continuing this pregnancy would be:

1. Bad 1...7 Good
2. Desirable 1...7 Undesirable*
3. Meaningless 1...7 Meaningful
4. Positive 1...7 Negative*

Higher average ATB scores would indicate a more positive overall attitude toward continuing to term; lower averages, a more negative attitude. Attitude toward continuing the pregnancy should predict behavior intention to continue. People like to think of themselves as consistent,²⁹ therefore looking upon this pregnancy as good, desirable, meaningful and positive would lead to a commitment to continue this pregnancy.

Subjective Norm (SN). Subjective norm is a person's own estimate of the social pressure to perform or not perform the target behavior. This may be

²⁷ C.C. Camosy, *Beyond the Abortion Wars: A Way Forward for a New Generation* (Grand Rapids MI: Wm. B. Eerdmans Publishing, 2015).

²⁸ T. Joyce, S.K. Henshaw, & J.D. Skatrud, "The Impact of Mississippi's Mandatory Delay Law on Abortions and Births," *JAMA* 278 (1007): 653-58.

²⁹ J. Cooper, "Cognitive Dissonance Theory" in *Handbook of Theories of Social Psychology*, ed. P.A.M. Van Lange, A.W. Kruglanski, & E.T. Higgins (Thousand Oaks CA: Sage, 2012), vol. 1, pp. 377-97.

measured directly, as presented here:

1. Most people who are important to me think I Should Not 1...7
Should continue this pregnancy.
2. I feel under social pressure to continue this pregnancy.
3. It is expected of me that I continue this pregnancy.
4. Most people who are important to me want me to continue this
pregnancy.

Higher average SN scores would indicate a stronger perceived social expectation to continue the pregnancy; lower averages, a weaker expectation. Subjective norm to continue the pregnancy should predict behavior intention to continue. Because of desires to be correct and to belong, people tend to act in ways that are congruent with the wishes of others who are important to them,³⁰ therefore feeling social pressure and expectations from others who are important to me to continue this pregnancy would lead to a commitment to continue this pregnancy.

Perceived Behavioral Control (PBC). Perceived behavioral control is the extent to which a person feels able to enact the behavior. This may be measured directly, as presented here:

1. I am confident that I could continue this pregnancy if I wanted to.
2. For me, to continue this pregnancy is: easy 1...7 difficult*.
3. The decision to continue this pregnancy is beyond my control.*
4. Whether I continue this pregnancy is entirely up to me.

Higher average PBC scores would indicate a stronger sense of the ability to continue the pregnancy; lower averages, a weaker sense of this ability. Perceived behavioral control over continuing the pregnancy should predict behavior intention to continue. If I think that I am able to accomplish a goal (birth), I am more likely to persist working toward the goal (continue the pregnancy); doubting my ability would lead to quitting (abortion).³¹ Con-

³⁰ F. Heider, *The Psychology of Interpersonal Relations* (Hoboken NJ: John Wiley & Sons Inc., 1958).

³¹ A. Bandura & E.A. Locke, "Negative Self-efficacy and Goal Effects Revisited," *Journal of Applied Psychology* 88 (2003): 87-99. doi:10.1037/0021-9010.88.1.87.

versely: thinking that I am *not* able to continue this pregnancy should predict abortion (e.g., “There is no way that I can have a child”).

Indirect Measurement of ATB, SN and PBC: Beliefs

ATB, SN and PBC may also be assessed indirectly by measuring their underlying beliefs. This is where TPB may be the most enlightening in achieving an understanding of UPDM. TPB offers a systematic framework by which to conceptualize the belief bases of ATB, SN and PBC. Items measuring these beliefs are presented in this section.

Behavioral Beliefs leading to ATB. TPB proposes that attitude toward a behavior is a function of *behavioral beliefs*, which are salient beliefs about the likelihood and desirability of the outcomes of the behavior. Let’s unpack this.

First, we assess *salient outcomes*: events that respondents commonly believe will happen if they perform the behavior. In the UPDM context, these outcomes can be ascertained by asking a separate sample of unplanned pregnant respondents the following questions and tabulating the most common responses:

What do you believe are the NEGATIVE things that would happen if you continue this pregnancy to term? (*Please write out one or more bad things that would happen here*):

What do you believe are the POSITIVE things that would happen if you continue this pregnancy to term? (*Please write out one or more good things that would happen here*):

For instructional purposes, I offer four hypothetical events, based on informal conversations with experienced pregnancy resource center personnel, that unplanned pregnant women are thought to commonly believe will happen if pregnancy is continued; these are listed in the Salient Outcomes column of Table 1. (All tables appear at the end of this article.)

Second, for each outcome we are interested in obtaining two beliefs, one about the *likelihood* of the outcome and one about the *desirability* of the outcome. For our four outcomes, these behavioral beliefs would be assessed using the items listed in Likelihood and Desirability columns of Table 1.

Combined beliefs about the likelihood and desirability of these salient outcomes would form the basis of a woman’s attitude toward continuing pregnancy (the calculation of the indirect ATB score is obtained by simply

summing the products of each outcome's likelihood and desirability ratings³²). To the extent that the desirable outcomes are rated as likely and the undesirable outcomes as unlikely, the woman would have a positive attitude toward continuing; to the extent undesired outcomes are rated as likely and desirable ones unlikely, a negative attitude.³³ For example, if a woman believes that after continuing the pregnancy it is likely and undesirable that she will parent this child, her lifestyle will change, and she will gain a sense of personal fulfilment and integrity, then her indirect ATB score would be very negative, indicating a very negative attitude toward continuing the pregnancy; it is probable that this score would correlate with the direct measure of ATB.

The indirect ATB measurement gives us a clearer window into common beliefs about outcomes associated with the behavior and may suggest topics for exploration and "reality checking." The list of outcomes presented in Table 1, gleaned from pregnancy resource center personnel, is suggestive. I note that the first outcome ("I will parent the child") indicates that if a child is born, adoption is not considered an option; this accords with other research in UPDM.³⁴ Interventions might explore the basis of this corresponding belief. The second outcome, lifestyle change, appears to hinge on the first outcome, but in any event the rated desirability of this outcome seems worthy of exploration. The remaining outcomes, sense of personal fulfilment and integrity, are positive in nature.

Normative Beliefs leading to SN. TPB proposes that the subjective norm about a behavior is a function of *normative beliefs*, which are beliefs about social expectations and the motivation to comply. Again, let's unpack this.

First, we access *normative referents*: people whom respondents commonly

³² That is, multiply likelihood and desirability ratings for each outcome, then sum these products. For example, if the likelihood ratings for outcomes 1, 2, 3, and 4 were, respectively 6, 5, 7, and 4, and the corresponding desirability ratings, +2, +3, +3, and +1, then the sum of the products would be $52 = (6 \times +2) + (5 \times +3) + (7 \times +3) + (4 \times +1)$. This would constitute a high and positive indirect ATB score.

³³ This rule is the basis of the *summation theory of attitudes*; it has been applied to understanding student attitudes toward abortion. (Petkova, Ajzen, & Driver, 1995). K.G. Petkova, I. Ajzen, & B.L. Driver, "Salience of Anti-Abortion Beliefs and Commitment to an Attitudinal Position: On the Strength, Structure, and Predictive Validity of Anti-Abortion Attitudes," *Journal of Applied Social Psychology* 25 (1995): 463-83. doi:10.1111/j.1559-1816.1995.tb01762.x.

³⁴ W.B. Miller, "An Empirical Study of the Psychological Antecedents and Consequences of Induced Abortion," *Journal of Social Issues* 48 (1992): 67-93.

believe have (or would have) an opinion about them performing the behavior. In the UPDM context, these referents can be ascertained by asking a separate sample of unplanned pregnant respondents the following questions and tabulating the most common responses:

In your life, what individuals or groups would DISAPPROVE OF your continuing this pregnancy to term? (*No names, just write their relationship to you, e.g., "my sister"*):

In your life, what individuals or groups would APPROVE OF your continuing this pregnancy to term? (*No names, just write their relationship to you, e.g., "my sister"*):

For instructional purposes, I offer three hypothetical referents, based on informal conversations with experienced pregnancy resource center personnel, that unplanned pregnant women are thought to commonly believe have an opinion about them continuing their pregnancy; these are listed in the Salient Normative Referents column of Table 2.

Second, for each referent we are interested in obtaining two beliefs, one about the *norm* of the referent (i.e., what they want, or would want, the respondent to do) and one about the *motivation to comply* with the referent. For our three referents, these normative beliefs would be assessed using the items listed in Norm and Motivation to Comply columns of Table 2.

Combined beliefs about the norms and motivations to comply with these salient referents would form the basis of a woman's subjective norm about continuing pregnancy (the calculation of the indirect SN score is obtained by simply summing the products of each referent's norm and motivation ratings, in the same manner as indirect ATB). To the extent that norm ratings are high and motivation ratings are positive, the woman would have a stronger norm toward continuing; to the extent they were low and negative, a stronger norm toward discontinuing. For example, if a woman believes that her mother, father and the father of her child all want her to continue and she is strongly motivated to do what they want, then her indirect SN score would be very high and positive, indicating a very strong subjective norm about continuing the pregnancy; it is probable that this score would correlate with the direct measure of SN.

The indirect SN measurement gives us a clearer window into common perceived norms about the behavior. Although the importance of the parental

norms may vary with collectivist cultural orientation,³⁵ the influence of subjective norms in general accords with the available evidence.³⁶ That is, the opinion of important others plays a significant role in the decision to continue pregnancy. This suggests that fruitful UPDM intervention strategies might include permission-based dialogue with relevant important others.

Control Beliefs leading to PBC. TPB proposes that perceived behavioral control is a function of *control beliefs*, which are salient beliefs about the likelihood & influence of factors affecting control of the behavior. For a third time, let's unpack this.

First, we assess *salient control factors*: circumstances or influences that respondents believe affect their ability to perform the behavior. In the UPDM context, these factors can be ascertained by asking a separate sample of unplanned pregnant respondents the following questions and tabulating the most common responses:

What circumstances would make it DIFFICULT for you to continue this pregnancy to term? (*Please write the obstacles here*):

What circumstances would make it EASY for you to continue this pregnancy to term? (*Please write what would help make it more possible here*):

For instructional purposes, I offer four hypothetical control factors, based on informal conversations with experienced pregnancy resource center personnel, that unplanned pregnant women are thought to commonly believe affect their ability to continue pregnancy; these are listed in the Salient Control Factors column of Table 3.

Second, for each factor we are interested in obtaining two beliefs, one about the *likelihood* of the factor being present and one about the *influence* of the factor on the ability to perform the behavior. For our four outcomes, these control beliefs would be assessed using the items listed in Likelihood and Influence columns of Table 3.

Combined beliefs about the likelihood and influence of these salient outcomes would form the basis of a woman's perceived behavioral control over continuing the pregnancy (the calculation of the indirect PBC score is obtained

³⁵ E.g., Yang & Einstein (2014).

³⁶ See Miller (1992); Smetana & Adler (1980).

by simply summing the products of each outcome's likelihood and influence ratings, as was done with indirect ATB and SN). To the extent that the influential factors are rated as likely and the uninfluential factors as unlikely, the woman would have strong sense of her ability to continue the pregnancy; to the extent influential factors are unlikely and uninfluential ones likely, a weak sense of her ability to continue. For example, if a woman believes that the financial ability to support a child, a personal support system to help with a child, a child-friendly school or career situation, and her ability to be a good mother would all make it easy to continue the pregnancy, but that all of them were unlikely, then her indirect PBC score would be very negative, indicating low self-efficacy toward continuing the pregnancy; it is probable that this score would correlate with the direct measure of PBC.

The indirect PBC measurement gives us a clearer window into common beliefs about factors that pertain to the ability to control a behavior, and may again suggest topics for exploration and examination. The list of factors presented in Table 3, gleaned from pregnancy resource center personnel, is consistent with UPDM literature about "adjustability to childbearing,"³⁷ and is suggestive. I note that the first three factors (finances, support system, and school/career situation) may be indicative of a child-unfriendly culture; interventions might explore action-based strategies and introduce supportive social networks. The fourth factor, ability to be a good mother, may reflect perfectionistic child-rearing sentiments prevalent in some modern subcultures: interventions might explore notions that the difference between being a "good-enough" vs. "good" mother is insubstantial.

Other Relevant Predictors Not in TPB

Additional predictors of behavior or behavior intention have been explored in psychological literature about TPB, including perceived anticipated regret,³⁸ past behavior,³⁹ and thinking about one's reasons for undeveloped

³⁷ See Miller (1992), p. 74.

³⁸ M. Conner, R. Lawton, D. Parker, K. Chorlton, A.S.R. Manstead, & S. Stradling, "Application of the Theory of Planned Behaviour to the Prediction of Objectively Assessed Breaking of Posted Speed Limits," *British Journal of Psychology* 98 (2007): 429-53.

³⁹ M. Conner & D. Flesch, "Having Casual Sex: Additive and Interactive Effects of Alcohol and Condom Availability on the Determinants of Intentions," *Journal of Applied Social Psychology* 31 (2001): 89-112.

attitudes.⁴⁰ Studies have also investigated perceived moral correctness for several behaviors, such as speeding,⁴¹ donating to cancer research,⁴² smoking, observing safety precautions, and exercising.⁴³ Given the moral and consequential nature of the decision to continue or abort a pregnancy, perceived moral correctness and anticipated regret may be particularly relevant. In the UPDM context, there is evidence for the importance of these predictors. In one study of 82 pregnant women, 18 of whom decided to give birth, reasons most strongly correlated with not having an abortion were related to perceived moral incorrectness, anticipated regret, and worry over not being able to become pregnant again.⁴⁴ One unpublished study is also suggestive: perceived moral obligation, beyond the effects of attitudes and subjective norms, predicted hypothetical intention to obtain abortion among a sample of non-pregnant female students.⁴⁵

Potential Additional Applications of TPB

TPB may be extended to understanding and affecting behaviors in other related life-relevant decisions such as: physician assisted suicide, voter choice, activism, donor behavior, policy-making, medical student intention to offer abortion,⁴⁶ and sexual behavior.⁴⁷ TPB seems particularly well-suited to informing pro-life strategic and educational initiatives. Two major efforts in this vein come to mind.

⁴⁰ T.D. Wilson, D. Kraft, & D.S. Dunn, "The Disruptive Effects of Explaining Attitudes: The Moderating Effect of Knowledge about the Attitude Object," *Journal of Experimental Social Psychology* 25 (1989): 379-400.

⁴¹ See Conner (2007).

⁴² G.R. Maio & J.M. Olson, "Relations between Values, Attitudes, and Behavioral Intentions: The Moderating Role of Attitude Function," *Journal of Experimental Social Psychology* 31 (1995): 266-85. doi:10.1006/jesp.1995.1013.

⁴³ G. Godin, M. Conner, & P. Sheeran, "Bridging the Intention-Behaviour Gap: The Role of Moral Norm," *British Journal of Social Psychology* 44 (2005): 497-512.

⁴⁴ Miller (1992).

⁴⁵ D.P. Nalbone, *Testing Competing Theories of the Attitude-Behavioral Intention Link for Attitudes toward Abortion*, unpublished doctoral dissertation, Claremont Graduate University, Claremont CA, 2000), Study 2.

⁴⁶ E.g., D.T. Myran, C.L. Carew, J. Tang, H. Whyte, & W.A. Fisher, "Medical Students' Intentions to Seek Abortion Training and to Provide Abortion Services in Future Practice," *Journal of Obstetrics and Gynaecology Canada: JOGC = Journal d'obstetrique et gynecologie du Canada: JOGC* 37 (2015): 236-44.

⁴⁷ Conner (2001).

First, the pro-life movement may benefit by identifying and exploring behavioral beliefs which are the bases of attitudes about abortion, that is, the likelihood and desirability of salient outcomes that people think will follow from greater restrictions on abortion. Two studies using student samples, one published⁴⁸ and one unpublished,⁴⁹ identified salient outcomes (and their subjective likelihood and desirability) of making abortion illegal or more heavily restricted. This is an insufficient amount of research upon which to draw useful conclusions, and in addition, the samples were not representative, contained different proportions of pro-life students, and were from different types of student populations twenty years apart. I present them here only to suggest how this sort of study might be useful. Both sets of outcomes are presented in Table 4, ordered by general category. Outcomes common to both studies were: increased adoptions, increased poverty, and more “back-alley” abortions. Outcomes focused on impacts on children (saving lives and adoption, giving birth to unfit, unwanted and abused children), freedom (holding people responsible, rights infringement, forcing rape/incest pregnancies, preventing a form of birth control), society (poverty, overpopulation, crime, protests, sexual practice), and women (teens pay a high price, back-alley abortions, health concerns, emotional distress). These outcomes and categories may be enduring beliefs that form the basis of reflection and response initiatives.

Second, the pro-life movement may benefit by identifying and exploring control beliefs which are the basis of perceptions of behavioral control with respect to continuing pregnancy. Above, I briefly explored several control factors: the financial ability to support a child, a personal support system to help with a child, a child-friendly school or career situation, and the ability to be a good mother. Some support for these factors exists in UPDM literature. For example, the reasons most strongly correlated with having an abortion in a sample of 82 women, 64 of whom had aborted their pregnancies, were “I was not emotionally ready to take on the responsibility of a baby then” and “having a small baby which would depend so much on me was an upsetting possibil-

⁴⁸ Petkova (1995).

⁴⁹ H. Harzynski, “Indirect Attitudes toward Greater Abortion Restrictions,” unpublished Senior Thesis, Department of Psychology, Rochester Institute of Technology, Rochester NY, 2015.

ity.”⁵⁰ If indeed these beliefs are widespread and predictive of abortion, they deserve explicit and detailed consideration when considering effective pro-life initiatives.⁵¹

Summary & Conclusions

In this paper I have advocated for the use of an empirically well-grounded theoretical framework to frame UPDM, and explored why the use of TPB would be fruitful for such a project. I reviewed TPB, then illustrated how it would be practically applied in the UPDM context using example questionnaire items. I touched upon some potential UPDM interventions, and additional variables not part of TPB that may be especially germane to UPDM. I then suggested two ways that TPB may help guide effective pro-life strategic initiatives.

One final consideration: applying TPB as I have outlined would provide useful categories for reflection, dialogue and persuasion. In a time of increasing polarization,⁵² Internet echo-chambers⁵³ and “us-them” type thinking,⁵⁴ opposing camps tend to become less aware – and hence less able to communicate effectively about—the other side’s “facts,” assumptions and reasoning. The use of TPB would mitigate against this harmful tendency. TPB seeks to systematically assess the beliefs upon which a behavior is based, and when applied to UPDM these beliefs are likely to be the primary categories needed for productive self-reflection, interchange and influence. Carefully assessing and addressing the beliefs surrounding UPDM will aid in effectively communicating about the issue. An example from another era: a major impediment to anti-slavery reform in Britain was the commonplace belief that slavery was economically necessary, that is, “If the slave trade became illegal, our economy

⁵⁰ Miller (1992), p. 75.

⁵¹ E.g., Camosy (2015).

⁵² B. Bishop, *The Big Sort: Why the Clustering of Like-Minded America Is Tearing Us Apart* (Boston MA: Houghton Mifflin, 2008).

⁵³ M.A. Smith, L. Rainie, B. Shneiderman, & I. Himelboim (20 February 2014): *Mapping Twitter topic networks: From polarized crowds to community clusters*. Retrieved from <http://www.pewinternet.org/2014/02/20/mapping-twitter-topic-networks-from-polarized-crowds-to-community-clusters/>.

⁵⁴ N. DiFonzo, J. Suls, J. Beckstead, M. Bourgeois, C. Homan, S. Brougher, A.J. Younge, N. Terpstra-Schwab, "Network Structure Moderates Intergroup Differentiation of Stereotyped Rumors," *Social Cognition* 32 (2014): 409-48.

would collapse.” However, this belief itself collapsed in part because of the widespread distribution of a well-researched and persuasive tract *An Essay on the Impolicy of the African Slave Trade*, written in 1788 by Thomas Clarkson.⁵⁵ That is, change occurred by identifying, considering and legitimately addressing peoples’ common beliefs about what would happen should slave trading become illegal. A similar approach – systematically assessing, considering and addressing widespread beliefs – would be likewise helpful in our era.

Table 1: Hypothetical Salient Outcomes of Continuing Pregnancy and Items to Assess their Likelihood and Desirability

Salient Outcomes*	Likelihood	Desirability**
I will parent this child.	If I continue this pregnancy, I will parent this child. [unlikely 1...7 likely]	Being a mother is [undesirable -3... +3 desirable]
My lifestyle will change.	If I continue this pregnancy, my lifestyle will change. [unlikely 1...7 likely]	A change in my lifestyle is [undesirable -3...+3 desirable]
I will gain a sense of personal fulfillment.	Continuing this pregnancy will bring me a sense of personal fulfillment. [unlikely 1...7 likely]	Experiencing a sense of personal fulfillment is [undesirable -3 ... +3 desirable]
I will have acted in accordance with my beliefs (sense of integrity).	Continuing this pregnancy will lead to a sense of integrity. [unlikely 1...7 likely]	Living with a sense of integrity is [undesirable -3 ... +3 desirable]

*Based on informal conversations with pregnancy resource center personnel.

**Desirability ratings use a 7-point scale, but for conceptual ease they range from -3 to +3.

⁵⁵ T. Clarkson, *An Essay on the Impolicy of the African Slave Trade, in Two Parts* (1787), ed J. Phillips. See J.R. Oldfield, *Popular Politics and British Anti-Slavery: The Mobilisation of Public Opinion against the Slave Trade 1787-1807* (New York NY: Routledge, 2012).

Table 2: Hypothetical Salient Normative Referents and Items to Assess their Norm and the Respondent's Motivation to Comply

Salient Normative Referents*	Norm	Motivation to Comply**
My Mom	My mom [does not 1...7 does] want me to continue this pregnancy.	What my mom thinks [is not -3 ... +3 is] important to me.
My Dad	My dad [does not 1...7 does] want me to continue this pregnancy.	What my dad thinks [is not -3 ... +3 is] important to me.
The father of my baby	The father of my baby [does not 1...7 does] want me to continue this pregnancy.	What the father of my baby thinks [is not -3 ... +3 is] important to me.

*Based on informal conversations with pregnancy resource center personnel.

**Motivation ratings use a 7-point scale, but for conceptual ease they range from -3 to +3.

Table 3: Hypothetical Salient Control Factors and Items to Assess their Likelihood and Influence

Salient Control Factors *	Likelihood	Influence**
My current financial situation (ability to financially afford pregnancy & parenting)	Having a financial situation able to afford a child is [unlikely 1 ... 7 likely]	If I had a financial situation that could support a child, it would be [difficult -3...+3 easy] to continue this pregnancy
My current personal support system (helpful in pregnancy & parenting)	Having a personal support system that would help me with a child is [unlikely 1 ... 7 likely]	If I had a personal support system that would help me with a child, it would be [difficult -3...+3 easy] to continue this pregnancy
My current school or career situation (child-friendly, i.e., able to accommodate pregnancy & parenting)	Having a child-friendly school or career situation is [unlikely 1 ... 7 likely]	If I had a child-friendly school or career situation, it would be [difficult -3...+3 easy] to continue this pregnancy
My ability to be a good mother	I am currently able to be a good mother [unlikely 1 ... 7 likely]	If I was currently able to be a good mother, it would be [difficult -3...+3 easy] to continue this pregnancy

*Based on informal conversations with pregnancy resource center personnel.

**Influence ratings use a 7-point scale, but for conceptual ease they range from -3 to +3.

Table 4: Salient Outcomes if Abortion Became Illegal or Were More Heavily Restricted

Outcome Category	If abortion became illegal (Petkova et al., 1995, p. 477)	If abortion were more heavily restricted (Harzynski, 2015, p. 11)
Child	Reviving the idea of life as a precious gift	
	Saving the lives of defenseless unborn babies	
	Giving birth to retarded and genetically unfit babies	
	Giving birth to unwanted children	
	Making more babies available for adoption	The amount of children available for adoption will increase Unwanted children will be abused
Freedom	Holding people responsible for the consequences of their actions	
	Giving birth to babies conceived in incest or rape	
	Infringing of fundamental human rights of privacy and freedom of choice	
Society	Preventing women from using abortion as a method of birth control	
	Exposing families to the risk of poverty and welfare	Poverty will increase
		The population will increase
		Crime will increase
		People will be upset and protest the decision
Women		Safe sex practices will increase
	Teenagers paying a high price for being careless	
	Women seeking “back-alley” abortions	Women will seek out back-alley abortions
		Pregnant women will face more health issues Women will face greater emotional distress

Figure 1: Theory of Planned Behavior

