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Reflections on the Continued Popularity of the Transtheoretical Model

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Abstract

Sometimes in health behavior research, purportedly novel theoretical models are offered that may help move thinking about behavior change forward, and may be well-received by clinicians, but over time end up being a subject of continual scientific disconfirmation. The transtheoretical model is one rather popular example. The five stages of change and associated 10 processes of change are well-known (e.g., DiClemente et al., 2008; DiClemente et al., 2004). Yet, the model has been discredited to a large extent by several in the health behavior research community. In the present editorial, we briefly summarize the transtheoretical model, mention its current ongoing popularity, identify the critiques of this model, and suggest how one might best consider the model in future health behavior research and practice.

Keywords

Transtheoretical Model, Stages of Change, Critiques, Needed Research

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Abstract

Sometimes in health behavior research, purportedly novel theoretical models are offered that may help move thinking about behavior change forward, and may be well-received by clinicians, but over time end up being a subject of continual scientific disconfirmation. The transtheoretical model is one rather popular example. The five stages of change and associated 10 processes of change are well-known (e.g., DiClemente et al., 2008; DiClemente et al., 2004). Yet, the model has been discredited to a large extent by several in the health behavior research community. In the present editorial, we briefly summarize the transtheoretical model, mention its current ongoing popularity, identify the critiques of this model, and suggest how one might best consider the model in future health behavior research and practice.

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Brief Description of the Transtheoretical Model

The transtheoretical model proposes that health behavioral changes occur in discrete stages based on intentional decision making and changes in cognition or behavior. Motivation and readiness to change are the key influences towards progression in the stages of change, which also aid in predicting adherence to health behavior regimens and engagement in the change protocol. Conceptually, there are five stages of change, which are transitional categories of psychological states that occur in a defined order, as one changes their relationship with a health behavior, indicating phases of progress toward a maintenance stage (Herzog, 2008; Norcross et al., 2011). These stages are: precontemplation, contemplation, preparation, action, and maintenance. Individuals are assessed on their readiness to move forward in the stages of change (Norcross et al., 2011). The precontemplation

stage has been stated to occur when participants indicate being unaware of negative consequences resulting from their problem or sedentary behavior (Norcross et al., 2011). Alternatively, they may be aware of their self-defeating behavior but simply be uninterested in changing their course of behavior. Regarding recovery from drug abuse, individuals in the precontemplation stage do not intend to change their behavior within the subsequent six-month period (Norcross et al., 2011). In some cases, attempts to change one's behavior lead to discouragement and avoidance (Prochaska & Velicer, 1997b).

Action-oriented program recruitment is said to be the most beneficial during the early stages of the transtheoretical model (Prochaska & Velicer., 1997b). Contemplation occurs once individuals intend to change their behaviors within the next six months. They may become more informed about the positive outcomes of change, but this stage can often be characterized as

chronic contemplation when individuals are not motivated enough to make the change (Prochaska & Velicer, 1997b).

The stage of preparation requires a plan of action and is followed by a small progression. Oftentimes, individuals in the preparation stage pursue self-help strategies. It is at this stage where some actions have been initiated but the threshold for effective actions has not been reached (Norcross et al., 2011; Prochaska & Velicer, 1997b). In some studies, the preparation stage is defined as an intention to change the behavior within the next 30 days.

A drastic change is seen during the action stage, which develops as individuals alter their lifestyles (Norcross et al., 2011). For example, during smoking cessation, achievement of complete abstinence would be considered as essential to the action stage. The goal of the action stage is to create sufficient change where health risks are at a minimum (Prochaska & Velicer, 1997b). The last stage is known as maintenance where six months of the criterion end-stage is met. For example, six months of continuous smoking abstinence would define entry into the maintenance stage. The optimal goal is to continue making health-conscious decisions and prevent relapse (Prochaska & Velicer, 1997b). Individuals pass through each stage although relapse and going through cycles of these five stages is possible. Since the mid-1980s relapse has been viewed as a step back in the stages of change and not a separate stage in the cycle (Littell & Girvin, 2002).

While the stages of change describe the discrete categories that a person can be in while improving one's health behavior, the processes of change have been described as behaviors and cognitions that foster progressive movement through the stages (e.g., Romain et al., 2018). Experiential processes of change (i.e., consciousness-raising, dramatic relief, self-reevaluation, environmental reevaluation, and social

liberation) are thought to be used in the early stages, whereas behavioral processes of change are thought to occur in the later stages of action and maintenance (i.e., self-liberation, helping relationships, counterconditioning, reinforcement management, and stimulus control). Summarizing these processes of change: efforts to better understand the behavior needing change, understanding the impact of the behavior on the individual and one's environment, and social pressures to change (experiential processes) are thought to precede committing to change, enlisting support of others, substituting healthy behavior instead of unhealthy behavior, using rewards to encourage change, and changing the environment to encourage change (behavioral processes). Thus, for example, an emphasis on consciousness-raising during earlier stages is said to elicit heightened emotions (i.e., dramatic relief) leading to grief and fear of consequences brought on by continued drug use or involvement in another problem behavior (Norcross et al., 2011). Theoretically, consciousness-raising and dramatic relief are hypothesized to "move" a person from a precontemplation state to a contemplation state. During later stages, techniques involving counterconditioning and reinforcement are expected to provide a sense of reward for individuals by practicing relaxation, finding less harmful distractions, and relieving cognitive distortions (Norcross et al., 2011). Reinforcement management and stimulus control are thought of as "processes" that are associated with moving a person from action to maintenance.

Current Popularity of the Trans-theoretical Model

This model remains widely utilized to the current day (e.g., Romain et al., 2018). Many articles have been written about the transtheoretical model. Looking at Google

Scholar under “transtheoretical model,” 47,500 citations are noted (15,000 since 2017, 5,530 since 2020). Looking at Google Scholar under “stages of change model,” 17,300 citations are noted (3,540 since 2017, 1,160 since 2020). Thus, this model remains quite popular in the literature (also see Armitage, 2009).

The transtheoretical model has been applied widely to describe dynamic changes that occur during alcohol, tobacco, and other drug use (ATOD) cessation (Schumann et al., 2005), though it has been utilized for many other types of health behaviors including physical activity (Brug et al., 2005), mental health, partner violence, and organizational change (Littell & Girvin, 2002). Looking at the first 100 websites on Google Scholar from 2020 to the present using the search term “transtheoretical model,” the authors retained 81 peer-reviewed articles on the TTM and examined their main content (examination of main content was low inference and author agreement was 100% among the first and second author, who served as the raters). We observed that 23 peer-reviewed articles pertained to physical activity/exercise, 18 pertained to diet/nutrition/weight control, 11 pertained to organizational planning (e.g., community service, employee counseling, policy planning), 7 pertained to mental health issues (e.g., depression, stuttering), 7 pertained to smoking/tobacco cessation/control, 4 pertained to medical regimen adherence (e.g., breast exams, medication), 4 pertained to sexual health (e.g., reducing HPV risk), 3 pertained to academic performance, 3 pertained to substance misuse/alcohol cessation, and 1 pertained to violence control (IPV reactions). Thus, the TTM is used quite widely in a variety of domains.

Criticisms of the Transtheoretical Model

Several issues have been raised about the transtheoretical model at least since 1992 (Bandura, 1997a, 1997b). Davidson, 1992; Herzog, 2008; Sutton, 2001). The first issue is that health behaviors may be more multifaceted than a single stage of change contingency can handle. For example, a person could be in an action stage regarding their engagement in moderate physical activity or controlled drinking and, at the same time, be in a contemplation stage regarding their engagement in rigorous physical activity or abstinence from alcohol (see Brug et al., 2005, regarding physical activity). The transtheoretical model does not address different stages a person may be in pertaining to different aspects of a single type of health behavior.

A second issue is that individuals may be placed in the same “stage” while having rather different perspectives regarding the health behavior. This is particularly true regarding precontemplation. Some participants may know that they are inactive but not be interested in changing their course of behavior. Other participants may be an unaware precontemplator; that is, unaware that they are inactive and that they need to change (Brug et al., 2005). Both types of individuals are not yet considered to be in the contemplation stage. However, arguably they may require different processes of change to move them forward (e.g., possibly, the provision of consequences information versus the need for motivational interviewing).

A third issue is that the stages of change attempt to create stages with sequential transitions between them out of what truly may be a continuum of cognitive-behavioral

change (Herzog, 2008; Littell & Girvin, 2002; West, 2005). For example, someone may be contemplating change and taking some “baby steps” in action (e.g., taking the stairs at work as the beginning of increasing physical activity). However, one may be confused as to whether that person is still in contemplation, has entered preparation, or really has entered an action stage. A debate in part relating to this critique, involving competing demands either for structural solidity and clarity versus acceptance of ambiguity regarding the stages, did not really solve or dissolve the issue (e.g., see Bandura, 1997a, 1997b; Prochaska & Velicer, 1997a).

A fourth issue is the possible error in taking a perspective that someone needs to pass through all five stages. That is, one could be in precontemplation one day, and immediately enter an action stage the next day to join a friend on a daily walk regimen or go to a coffee shop rather than to a bar. Also, someone could move cognitively between precontemplation, contemplation, and preparation in a matter of minutes, even darting back and forth between these three meta-cognitive stages, from any one of the three stages to the other, as well as move from precontemplation to action in a matter of moments. The argument that one must invariably pass through several predefined stages is what philosophers of science might see as an example of teleological thinking (Mayr, 1992). One can't *know* that someone inevitably will pass through all five stages. Indeed, the variations in staging patterns is enormous in the literature. In addition, if a change agent insists that one must pass through all stages, that could be perceived as prescriptive and could delay behavior change (Adams & White, 2005).

A fifth related issue is that the model may not well address the reality that people often live within states of equivocation. One's behavior may vary from moment to moment (e.g., see Herzog et al., 2015). Herzog and

colleagues described several such studies and, in their own study, indicated that two-thirds of a community sample of smokers reported rapid fluctuations in motivation to quit smoking. Likewise, many persons exhibit several lapses in drinking behavior while trying to quit problematic drinking of alcohol. Such behavior may indicate that the problem drinkers are fluctuating rapidly between action and maintenance, between different action end goals (abstinence versus controlled drinking), or simply that they are fluctuating on a continuum of motivation to stay stopped. Also, because goals for achieving healthy behaviors may be different for different persons, people may disagree on when a maintenance stage is being exhibited (Brug et al., 2005).

A sixth issue is that the transtheoretical model may not actually provide a novel empirical perspective. The processes of change have been utilized for many years outside of the transtheoretical model. These strategies are often used in cognitive-behavioral therapy and in motivational interviewing (e.g., Abrams et al., 2000; Armitage, 2009; Goldfried & Davison, 1994; Meichenbaum, 1977; Sussman, 2017). The novelty of the TTM is grouping these processes of change within the discrete stages. Arguably, however, many, if not all, of these processes may be applied to multiple stages of change (Bernard et al., 2021). For example, self-re-evaluation could occur in all stages. Some research does suggest that experiential processes of change tend to occur prior to behavioral processes of change (regarding smoking cessation), whereas other research suggests that any of the experiential or behavioral processes might act in tandem (regarding physical activity; see Engels et al., 2021; Romain et al., 2018). Likewise, in a two-time point study conducted to investigate physical activity in teens on Oahu (Engels et al., 2021), change involving enjoyment, family support, and knowledge were found to

be predictors of moderate to vigorous physical activity independent of TTM stage (each stage measured through single items). Unfortunately, utilizing experiential processes of change may even suppress initiation of increased physical activity (Romain et al., 2018). That is, behavioral processes may be better utilized throughout the continuum of motivation to exercise more.

A seventh issue is that the assessments of stages of change, generally involving self-assessment, questionnaires, and surveys to place participants in a stage, provide inconsistent assessments of staging (Herzog, 2008; Littell & Girvin, 2002; Romain et al., 2018; Sutton, 2001). For example, behaviors associated with physical activity are subjective and can lead to unreliable staging which render staging algorithms invalid (Adams & White, 2005). Researchers sometimes suggest aggregating stages to increase reliability of measurement (e.g., Marttila & Nupponen, 2003). Time courses suggested between stages (e.g., use of six-months or one-month) vary a great deal across studies and may not be necessary. Studies not including past attempts to change may cause variability in measurements where time frame is not taken into account as a point of reference (Littell & Girvin., 2002).

Assessments of the stages of change often employ an algorithm for classifying people into a discrete stage. Algorithm questions may measure current behaviors, intentions to quit, and more-or-less fixed but arbitrary time frames, to place persons in a stage. Further, yes-or-no type responses often are required regarding questions that many people may not have yes/no answers to (e.g., they may not be sure). Not surprisingly, the algorithm questions' ability to predict staging tends to be unreliable (Armitage, 2009), as intentions and behavior may have different contributing factors, for example. In fact, with exception of the precontemplation stage, individuals may not naturally fall into one stage at a time,

which forms inconsistencies in algorithm placements (Littell & Girvin., 2002). In terms of the ability to assess stages of change, one may only be able to reliably discern precontemplation from all other stages, the latter which perhaps might be relabeled as "action-related" (e.g., de Freitas et al, 2020; see Littell & Girvin., 2002). Still another model places precontemplation, contemplation, and preparation into a "motivational phase", whereas action and maintenance are placed into a "volitional phase" (Armitage, 2009). With either alternative model, only two stages are viewed as operative. Conversely, some studies use three stages. Dupont and colleagues (2017) examined support for the stages of change to explain change in adolescent cannabis treatment, but only utilized the precontemplation, contemplation, and action stages. It becomes difficult to compare the SOC across studies with so much variation in how many stages is utilized.

Still another issue with assessment is that because intervention strategies are based on one's stage of change placement, being placed in the wrong stage (e.g., a contemplator assessed as a precontemplator receiving precontemplation interventions) may not serve the generalized purpose of the intervention. Conversely, the contemplation ladder is an 11-point scale (utilized to assess motivation to quit smoking), which appears to provide a more accurate measurement of motivation to quit (Herzog & Komarla, 2011). Certainly, the fact that most stages of change studies are cross-sectional makes longitudinal inferences suspect (Armitage, 2009; Littell & Girvin, 2002).

An eighth issue associated with this stage-based model relates to the simplicity of placing individuals into five stages regardless of outside factors contributing to change, such as age, gender, and socioeconomic status (Adams & White, 2005). Behaviors may be affected by sources of persuasion

such as variations in social environments (e.g., structural racism). As an obvious microsocial example, if someone is mandated to take an exercise class, one will increase their physical activity regardless of their readiness for change. Also, stage-based interventions may work for short-term motivation and change; however, it is likely that an individual will relapse to their previous behaviors if social forces (e.g., alcohol marketing, existence of happy hours, old friends) become stronger influences than the intervention methods (Brug et al., 2005).

Further, it is also known that individuals may make drastic changes in their lifestyle as a response to life events in logical or illogical ways. Events such as health problems, births, death, and divorce are few examples of events that can lead to changes without previous motivation to change (Littell & Girvin, 2002). Implicit cognitive processes may steer behavior, particularly under periods of stress (Sussman, 2017; West, 2005). The transtheoretical model assumes that deliberate, rational cognitive processing of information is operative. That is, this model assumes, especially in the way survey items are used to categorize people into stages, that people are inherently rational and plan things out. However, actual changes occur through a chaotic process and this process is hard to assess (Herzog, 2008). What “pops” to mind, often due to environmental inputs, may direct behavior. Suggesting that the model only intends to apply to intentional change (Prochaska et al., 1992) fails to address the relative importance of deliberate versus implicit cognitive processes in behavior change (e.g., Larabie, 2005).

Recommendations for Thinking about the Transtheoretical Model in the Future

While reviewing the research literature for this editorial, we examined all English-

language peer-reviewed critiques of the TTM model that exist to our knowledge. However, we did not engage in a systematic review, but rather in a narrative, selective summary of these critiques, as well as imparting ideas that one might infer from them. We noted that various reviews and empirical studies on the transtheoretical model highlight numerous difficulties, particularly with the stages. Possibly, future clinical work should consider processes of change that can move people out of precontemplation (e.g., when costs rise reliably above benefits of not changing), and then employ an arsenal of strategies to help individuals change at that point. The processes of change might be utilized in a grand “action stage” and might be tailored to the individual, in a two-stage model.

One need for future work on a potential “state of change” model (West, 2005) is that processes associated with moving a person from short-term maintenance to longer-term maintenance is not well delineated. In an earlier version of the model, “relapse” was included but then was dropped in favor of viewing a cycling back to earlier stages, such as to precontemplation (Littell & Girvin, 2002; Prochaska et al., 1992). Thus, it is perhaps not surprising that the model is not good at predicting longer-term change (Adams & White, 2005; Davidson, 2014). Much more work is needed to identify early and later maintenance needs, as the likelihood of relapse decreases each year one maintains a health behavior change (e.g., substance abuse; Sussman 2017). Possibly there may be different stages of maintenance, as has been suggested in recovery texts (e.g., Mueller & Ketcham, 1987).

The stages of change, just like the stages of recovery, could be used within treatment settings to identify resources that might help someone in need of a low-stress environment and social support, and may be utilized to focus on change as opposed to pressuring or

stigmatizing the participant. That is, it might be best considered as a clinical heuristic. Precontemplation might simply refer to someone not being in a treatment program. Contemplation might refer to what a clinician might say to a potential patient, or to someone at the beginning of treatment, to get them thinking about change. Preparation and action could merely identify the beginning of mandated or voluntary engagement in a formalized treatment program. Maintenance could refer to aftercare programming.

TTM fails to assess readiness and preparedness well (West, 2005). In cases where addictive behavior is under investigation, assessing motivation for change is critical. However, increased participant motivation does not indicate willingness to take immediate action to change. When implementing motivational interviewing techniques, clinicians might focus on a timeline for participants to encourage change. Future research should include implementation of techniques to strengthen action willingness moving participants out of what might be labeled a contemplation stage toward action (Dupont et al., 2017).

Possibly, the stages of change may be of importance when targeting interventions for those who appear to be seeking to change their behavior (Armitage & Arden., 2008). Implementation intention techniques combine motivation to change and planning and may be utilized along with the processes of change to facilitate desired behavior. Implementation intention techniques focus on targeting behaviors and replacing them with appropriate responses that will lead to goal attainment (Armitage., 2009; Armitage & Arden., 2008). For example, one may state an implementation intention that when they are with friends who plan to go to a nightclub rather than a coffee shop after dinner, they will state that they will go home due to being busy. They may utilize the self-reevaluation

and environmental reevaluation processes to guide the use of implementation intentions. Research might explore their conjoint use (Armitage, 2009).

The transtheoretical (“stages of change”) model continues to be utilized as a heuristic in the understanding of health behavioral changes since its inception (e.g., DiClemente & Prochaska, 1982; Prochaska & DiClemente, 1983). It has been of great assistance to practitioners, who must grapple with their patients’ ambivalence in making healthy changes and need a means of trying to place such hard-to-predict, often recyclical behavior into an understandable framework (e.g., see Brug at al., 2005; Romain et al., 2018). The transtheoretical model also may facilitate a less judgmental view of people not ready for change or who relapse, as in the case of the addictions (Littell & Girvin, 2002; Stockwell, 1992). Thus, it is possible that the TTM is best considered a clinical heuristic, which may assist in decreasing patient stigma and possibly enhance recovery but may not yield fruitful prospective scientific findings as a coherent theoretical model. Thus, most importantly, research directions include the need for longitudinal studies that examine behavior change and that might detect what discrete changes, if any, do occur. It is possible that behavior change occurs before cognitive change (e.g., self-monitoring of smoking behavior may result in a decrease of one’s level of smoking; Sussman, 2017). Methods such as ecological momentary assessment (EMA) might be utilized to identify real-time changes in thoughts, feelings, and behaviors, as one engages in health behavior changes.

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