



Application of Self-determination Theory to Illness Self-management Interventions: Identifying Mediators

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Abstract

NIMH requires intervention research to utilize an experimental therapeutic approach, identifying mediators to examine causal mechanisms of change. The authors propose utilizing self-determination theory (SDT) to guide research design for self-management interventions, using Wellness Recovery Action Plan (WRAP) as an exemplar. To delineate the theory's relevance to self-management interventions and recovery outcomes, the authors describe the main constructs of SDT and demonstrate its applicability to WRAP and recovery. Suggestions for research design and measurement strategies are provided.

Keywords Serious mental illness · Self-determination theory · WRAP · Self-management · Recovery

In 2014, NIMH announced a requirement for applicants to utilize an experimental therapeutic approach to intervention research (Insel 2014; National Institute of Mental Health “Strategic Plan” 2015). An experimental therapeutic approach extends beyond research on the efficacy or effectiveness of an intervention and attempts to open the “black box.” In order to understand the causal mechanisms of interventions, research designs must clearly delineate mediators that lead to clinical change. These mediators, referred to as “targets,” must be measured along with distal outcomes. In this way, clinical research yields information about the efficacy and effectiveness of interventions (outcomes) as well as information about hypothesized mechanisms of change (targets). Understanding targets can lead to intervention refinement and may generalize to intervention development more broadly.

Illness self-management (ISM) interventions are gaining traction in mental health services research (Petros and Solomon 2015); however, the theoretical frameworks to explain causal mechanisms of change have not been widely explored. In order to understand how ISM interventions

enhance recovery and other outcomes for adults with serious mental illness, a theoretical framework must be identified to direct research into hypothesized mechanisms of change. The authors of this paper use Wellness Recovery Action Plan (WRAP), one of the most widely used ISM programs (Cook et al. 2012b), to illustrate how self-determination theory (SDT) may explain the “black box” of the intervention and guide future research on self-management programs. While the mechanisms of change for other popular programs, like Illness Management and Recovery (IMR), are also likely explained by SDT, they also contain didactic approaches and skills building content (Petros and Solomon 2015) that are explained by additional theories (Mueser et al. 2006). Therefore, using WRAP for illustrative purposes makes for a more accessible example.

ISM and WRAP

ISM programs help people with serious mental illness pursue wellness by encouraging self-regulated learning of individualized recovery strategies (Petros and Solomon 2015). Whereas traditional mental health interventions feature prescriptive or didactic instruction, ISM programs offer a framework for personal exploration, encouraging trial and error in daily life to identify strategies to manage illness, maximize wellness, and attain personal goals. ISM programs offer the ultimate contrast to outdated, paternalistic interventions in which a medical provider unilaterally prescribed

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treatment. Instead, consumers are recognized as the experts of their lived experience. They are encouraged to reflect on what works and collaborate as needed to develop new recovery strategies. ISM programs empower consumers to identify as active agents, capable of realizing recovery, and provide a framework to develop recovery strategies. The approach represents a profound shift: the presumption is that people with psychiatric disabilities will naturally seek psychological health without requiring external direction or pressure from providers.

WRAP is a prime example of an ISM program. It is most commonly offered in a small-group format over the course of 8–12 weekly sessions (Cook et al. 2012b), but it can be completed in a condensed group-format lasting a few days (Doughty et al. 2008), one-on-one with a facilitator, or independently with a workbook (Copeland 2010). Originally, programming was co-facilitated by certified peers in advanced states of recovery, but the definition of “peer” has since expanded to include anyone who practices WRAP regardless of personal experience with mental illness.

Throughout the program, participants develop a series of action plans to pursue recovery. The plans contain personalized strategies aimed at promoting and maintaining wellness. First, participants are encouraged to engage in self-reflection. Participants develop insight into what they look and feel like when they are well, and they learn to identify indicators of decrements to wellness. Second, they are guided through activities to identify accessible strategies that promote wellness. These strategies are incorporated into plans for use on a daily basis, as responses to triggers and threats to wellness, and during times of crisis when others will be directed to take control of pre-determined decisions and actions. By creating these plans, consumers ideally increase self-awareness and insight, identify strategies for maintaining and advancing recovery, and develop contingency plans for managing risks to wellness (Cook et al. 2012a, b; Copeland 2010).

Mary Ellen Copeland, WRAP’s creator, promotes the idea that five “key concepts” engender recovery (Copeland 2010). “Key concepts” refers to the way people think about themselves and interact with others as they pursue wellness. The most prominently featured concept is hope, and participants are encouraged to believe in the possibility of living a full and self-directed life (Copeland 2010). The other four key concepts are personal responsibility, education, self-advocacy, and social support (Copeland 2010). Together, these five concepts are meant to enhance participants’ perceived recovery and shape the way that they approach the pursuit of wellness.

Empirical evidence demonstrates WRAP’s efficacy at enhancing recovery, increasing hopefulness, reducing symptoms, improving quality of life, and advancing self-advocacy (Cook et al. 2009, 2010, 2012a, b; Fukui et al.

2011; Higgins et al. 2012; Jonikas et al. 2013; Starnino et al. 2010). Leading researchers of WRAP acknowledge statistically significant, though “relatively modest,” changes in outcomes (Cook et al. 2012b, p. 888; Jonikas et al. 2013, p. 266). Although the changes are small, they may be personally significant for participants (Cook et al. 2012b). Understanding causal mechanisms of change may lead to refinements and strategies to enhance the impact of WRAP and other ISM interventions.

Self-determination Theory

SDT may explain the causal mechanisms of change for ISM programs like WRAP. SDT is a theory about motivation, personality development, and well-being (Deci and Ryan 2008, 2015; Ryan 2009; Ryan and Deci 2000, 2017). The theory posits that all people are inherently equipped with a drive for personal growth and will naturally strive for wellness if their psychological needs are met for autonomy, competence, and relatedness (Deci and Ryan 2008, 2015; Ryan 2009; Ryan and Deci 2000; Ryan et al. 2008). SDT outlines the process of self-regulation, describing how people internalize social values and extrinsic contingencies, thereby moving from controlled to autonomously motivated behaviors that align with personal values and goals (Ryan and Deci 2000). Only when psychological needs are met will people experience integration and psychological wellbeing.

Many theories about human behavior are situated on a continuum between mechanistic and organismic. Mechanistic theories position people as passive beings that are spurred to action because of external forces—exogenous stimuli—acting upon them (Deci and Ryan 2015; Ryan and Deci 2002). Skinner’s operant theory resides on the mechanistic side of the continuum and posits that as stimuli are paired with behaviors, people progressively associate the behavior with the stimuli; desirable stimuli will increase the likelihood of behaviors while undesirable stimuli will decrease their likelihood. Interventions such as behavioral activation are consistent with such mechanistic approaches to understanding and modifying human behavior.

At the other end of the spectrum, organismic theories privilege endogenous stimuli as driving forces of activity and posit that people are naturally oriented toward psychological growth, integration, and wellness (Ryan and Deci 2002, 2017). Organismic theories hypothesize that people are capable of motivating themselves to act within their social worlds from a “coherent sense of self” (Ryan and Deci 2002, p. 3), whereas mechanistic theories make no presumptions about “innate developmental tendanc[ies]” (Deci and Ryan 2015, p. 486). Thus, from an organismic orientation, a person’s development is attributable more to one’s volitional, self-directed actions rather than passive responses

to external reinforcers—although environmental factors are inextricably linked to the process by supporting or constricting psychological growth. Interventions based on organismic theories privilege endogenous stimuli as the main drivers of motivation and address environmental factors that support natural growth tendencies.

SDT is organismic at its core, concerned with self-determined behavior that leads to psychological growth and behavioral self-regulation (Ryan and Deci 2017). The theory is concerned generally with two types of motivation: autonomous and controlled. Behavior that is controlled results from coercion or obligation (Deci and Ryan 2015). Autonomously motivated behavior is volitional, either inherently pleasurable or consistent with one's values and goals (Deci and Ryan 2015; Ryan and Deci 2017). The more one acts with autonomous motivation, the more likely the person will experience psychological growth and well-being. Thus, of central importance to SDT is the process by which a person internalizes and integrates motivation for their actions, thereby broadly supporting psychological growth and wellness.

Internalization and Integration

Autonomous motivation can result from both intrinsic and extrinsic motivation. Intrinsic motivation refers to behavior that is enjoyable in its own right, such as many leisure activities. External motivation applies to behavior that is not inherently pleasurable but results in some desired outcome or extrinsic reward. Many people are externally motivated to work, for example, not because it is inherently fun, but because it results in a paycheck. However, just because people are externally motivated to engage in particular behaviors does not mean they are acting non-autonomously. SDT proposes that behavior which is motivated externally can involve varying degrees of autonomy, depending on the degree to which a person internalizes the value of the behavior. To distinguish the degree of autonomy of externally motivated behavior, Ryan and Deci proposed a model to distinguish levels of internalization and integration of the regulation of behaviors (Deci and Ryan 1985; Ryan and Deci 2000).

At the heteronomous end, where behaviors are the least autonomous, actions are motivated by *external regulation* (Ryan and Deci 2000, 2017; Markland et al. 2005). An example may be a person with serious mental illness who has been court ordered to meet with a case manager through Assisted Outpatient Treatment, or “outpatient commitment.” The person may comply and engage in case management because of the pressure of the court, but once the external regulation of the behavior is removed, the person is unlikely to continue without a shift in motivation. Behavior that is

externally regulated tends to be performed poorly with minimal commitment (Markland et al. 2005).

The next level of extrinsically motivated behavior describes actions with *introjected regulation* (Ryan and Deci 2017). At this slightly more autonomous level, people are not mandated to comply, but neither do they fully endorse the value of the behavior. People may be motivated because of internal pressures or self-imposed contingencies for successful or failed applications of the behavior. For instance, a person may take an antipsychotic medication not because they find it helpful but because they don't want to be seen as a “resistant client.” They may impose a self-concept associated with successful compliance (i.e., “If I miss a dose, then I must not want to get better, but if I take these medications, then at least I'm showing my psychiatrist that I am a good patient”). Studies suggest that introjected regulation is superior to external regulation for maintaining target behaviors but is also associated with negative emotions and inner conflict (Markland et al. 2005).

Further along the continuum of internalization is *identified regulation* (Ryan and Deci 2017). At this level, a person consciously values the behavior and ascribes personal importance to it (Ryan and Deci 2000). Behaviors regulated through identification are associated with personally valued outcomes that outweigh the costs of engaging in the behavior. An example of this may be engaging in regular exercise to elevate mood; while the activity may not be inherently pleasurable, the benefits of feeling less depressed, losing weight, and having more energy outweigh the inconvenience and time it takes.

Finally, *integrated regulation* is the most autonomous form of extrinsically motivated behavior (Ryan and Deci 2017). At this level, behaviors are fully internalized and broadly congruent with values and beliefs. An example of this is a person with bipolar disorder who elects to engage in mindfulness meditation because it reduces symptoms and increases wellness, but also because it is consistent with the person's preference for non-medical therapies and overarching values of living in the present moment with suspended judgment of challenging emotions.

The degree to which a person develops internal motivation for engaging in activities is directly associated with increased persistence, behavioral quality and mastery, and overall wellbeing (Ryan and Deci 2000). In other words, a person is more likely to feel a sense of volition about engaging in an externally motivated activity with higher degrees of internalization—the process by which a person accepts and takes ownership of the value of engaging in the activity (Deci and Ryan 2008). A higher degree of internalization is correlated with increased persistence toward goals, enhanced behavioral effectiveness, and improved wellness (Deci and Ryan 2008). Thus, the more broadly a person experiences high levels of internalization and volition about

their behavior, the more likely they are to experience high levels of integration, behavioral mastery, persistence toward goals, and overall wellness. In an ideal scenario, according to SDT, a person with serious mental illness would engage in behaviors that are oriented toward recovery with high degrees of internalization and volition, thus achieving high levels of psychological integration and overall wellness.

Psychological Needs

SDT posits that a person's environment can support (or discourage) internalization and motivation by meeting (or thwarting) the three basic psychological needs for autonomy, competence, and relatedness. For instance, people may engage in externally motivated activities because sufficient social pressure exists. If one's social network strongly endorses a particular behavior, such as seeking therapy, a person is more likely to adopt the social value for that activity; internalization happens progressively, and a person will engage in the activity with volition. Thus relatedness is an important factor for internalization.

Similarly, people are more likely to adopt and internalize the value for certain activities if they feel efficacious (a la competence) in executing the behaviors. A person who feels ill-equipped to engage in cognitive restructuring is much less likely to do it than a person who feels competent in identifying automatic thoughts and developing rational responses. Internalization of cognitive restructuring is more likely if one can effectively reduce challenging emotions through the use of well-constructed rational responses to unhelpful automatic thoughts.

Although Ryan and Deci (2017) do not privilege autonomy as the most important of the three psychological needs, they suggest it may play an instrumental role in allowing a person to “actively satisfy all of their needs” (p. 247). Some research suggests autonomy support predicts perceptions of all three psychological needs (Ryan and Deci 2017). Indeed, Brehm's theory of reactance underscores the importance of autonomy, even predicting the outcome of learned helplessness when a person is unable to restore one's freedom (Brehm 1966; Brehm and Brehm 2013). The importance of autonomy is reflected in the name of the theory, which signals self-determination as key for psychological health.

As people internalize behaviors that have extrinsic motivations, they progressively act autonomously, exerting self-determination for activities that are not inherently pleasurable but that align with their personal values and goals. When people exert self-determination, they are more likely to attempt new behaviors and persist in their execution until they have developed mastery over requisite skills. Ultimately, a person's wellness is related to the degree of internalized motivation for activities, which is in turn impacted by the relative support in one's environment for

autonomy, competence, and relatedness. ISM interventions that increase a person's perceived autonomy, competence, and relatedness, will theoretically result in enhanced levels of wellness.

Historical Context of Mental Health Services: Thwarted Psychological Needs

Historically, the mental health system stymied support for the three psychological needs. Providers defined serious mental illness by a predicted course of decline and decompensation, often prescribing long-term institutionalization. In this context, people were robbed of deciding where and how to live (autonomy), prevented from engaging socially with family and friends outside of the institution (relatedness), and were prevented from working and contributing to the larger society (competence). Even for people with serious mental illness living in the community, providers directed mental health services, and the focus of treatment was often increasing compliance to treatment plans, regardless of consumers' endorsement or participation in their development; such an approach is the antithesis of autonomy and competence.

Deegan (1992), a pioneer in recovery literature, described a central problem with the mental health system; it creates and perpetuates a cycle of disempowerment and despair. Deegan described the process as follows: A paternal system of care presumes the incapacity of people with serious mental illness. Providers prescribe a restrictive treatment plan, reward compliance, punish non-compliance, and interpret mindful deviation from treatment plans as evidence of illness. People with mental illness are thus reinforced for acquiescing to a system that progressively takes more control, and behavior subsequently becomes more controlled, thwarting the fulfillment of psychological needs and attenuating psychological growth and wellness.

Self-management interventions offer the antidote. They privilege consumers' voices and encourage a self-directed approach to recovery. Given the historical legacy of the paternalistic mental health system, many consumers are still trying to rebuild a robust sense of self-determination. In this way, much of the important work of ISM programs revolves around helping consumers build autonomy-supportive environments and fulfilling psychological needs for autonomy, competence, and relatedness. The interventions then figuratively step aside as consumers take the lead to find their own strategies to pursue recovery. SDT thus explains how ISM programs create change in participants' perceived autonomy, competence, and relatedness, which then results in enhanced wellness and recovery outcomes. Of course ISM programs vary, and some that retain more didactic strategies for skills

building (Petros and Solomon 2015) may have additional theoretical orientations (Mueser et al. 2006).

SDT and WRAP

The following describes how WRAP provides a template for participants to meet basic psychological needs, thereby advancing recovery and wellness. The authors detail the conceptual overlap between SDT and Copeland’s (2010) five key concepts (see Fig. 1) and demonstrate how WRAP programming leads to recovery outcomes by enhancing SDT mediators of autonomy, relatedness, and competence (see Fig. 2).

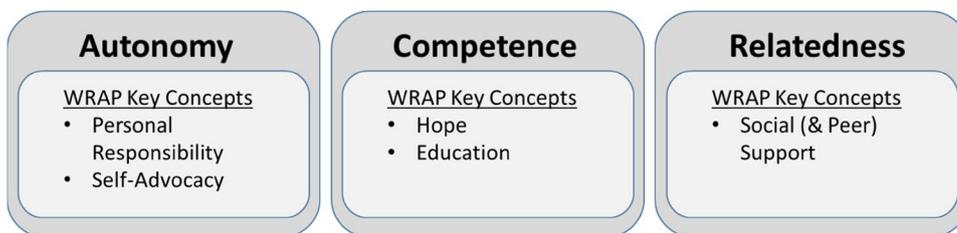
Autonomy

Two of the five key concepts, personal responsibility and self-advocacy, relate to the need for autonomy. Copeland (2010) found that adults with serious mental illness had attenuated experiences of recovery when they engaged in

blaming behavior towards other people or external events and conditions—focusing on what was being done *to them*. She found that people who embraced personal responsibility and took control of their own journeys toward wellness, focusing on what they could do *for themselves*, had more robust experiences with recovery. During WRAP programming, participants are encouraged to take personal responsibility for their own journeys toward recovery and exert autonomous control over the development and implementation of personal wellness strategies.

Acknowledging environmental contributions, Copeland (2010) emphasized that systems and providers can and do disempower people with psychiatric disabilities. WRAP empowers people to wrest back control of their lives and advocate for themselves. Copeland breaks down the idea of self-advocacy into digestible topics, including encouragement for people to believe in themselves, decide what they want, express themselves clearly, and assert themselves calmly (pp. 18–23). These topics demonstrate how WRAP both encourages and provides a road map for people to exercise self-determination and take autonomous control of their

Fig. 1 Relationship among SDT’s psychological needs and WRAP’s key concepts



WRAP: Content & Processes

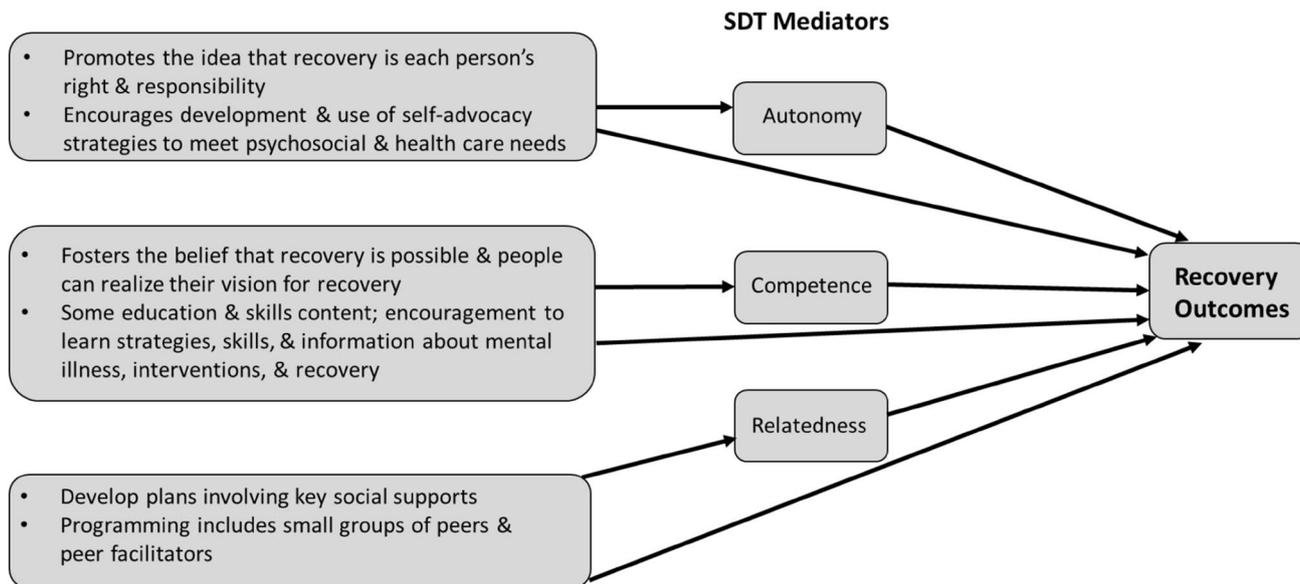


Fig. 2 Relationship between WRAP and recovery outcomes with SDT mediators

own journeys toward recovery. In this way, WRAP may create change in perceived autonomy, which results in enhanced recovery outcomes (see Fig. 2).

Competence

SDT's psychological need for competence aligns with WRAP's concepts of hope and education. Copeland (2010) noticed a difference between people excelling and struggling with recovery, primarily regarding hope, which refers to the belief that goals are achievable (Snyder et al. 1991). More specifically, hope is comprised of two factors, respectively related to outcome expectancies and efficacy: the belief that one can find strategies to reach one's goals and the belief that a person can reach goals through one's own determined effort (Snyder et al. 1991). In other words, people with high degrees of hope believe and expect they can find *and* enact strategies for goal attainment, both of which presume the competence to do so.

During WRAP programming, participants identify personal goals—typically related to wellness and recovery—and spend the majority of programming creating action plans to realize their goals and identifying past and current successes to reinforce hope for recovery. Developing action plans requires that people capitalize on their existing competences, and it may require participants to acquire and hone new skills. To that end, Copeland (2010) underscores the importance of education—particularly content on mental illness and wellness strategies, such as effective use of medication and counseling, journaling, and managing trauma; and “lifestyle issues” like employment, exercise, and diet. WRAP manuals provide examples of wellness information and describe how it can be used to make decisions about the adoption and effective use of recovery strategies. In this way, WRAP provides a roadmap for how education contributes to plan development and leads to skills-building that ultimately advance recovery. Theoretically, therefore, WRAP increases competence, which leads to enhanced recovery outcomes.

Relatedness

Finally, social support, related to SDT's concept of relatedness, is integrated into WRAP programming in three ways: social network members, peer facilitators, and peer participants. Copeland (2010) emphasizes the importance of having a social network of at least five people so as not to overwhelm any one person. Participants develop wellness plans in which they delineate actions that they want specific social network members to take. Social supports are especially integrated into the crisis and post-crisis plans, wherein participants detail how others should step-in to take control of certain decisions and activities that a person may be temporarily unable to complete independently. A plan's

success is dependent upon social supporters' participation, thus requiring plans to be endorsed by social network members. In this way, broad support is garnered for the recovery strategies embedded in the plans, reinforcing participants' internalization of those strategies and contributing to their overall sense of relatedness.

WRAP programming is facilitated by two certified peers, often in advanced states of recovery and always users of WRAP personally. Facilitators serve as behavioral models, testifying to the program's effectiveness and providing personal examples of how WRAP can advance recovery. As participants are exposed to facilitators' endorsement of WRAP's utility and effectiveness, they become more likely to internalize WRAP's central tenets as well as the use of identified recovery strategies. In this way, using WRAP's framework and enacting recovery strategies proceeds from a place of autonomous motivation based on the internalization and integration of the values of such behaviors.

Other participants of WRAP programming can provide a sense of relatedness associated with the lived experience of mental illness and the pursuit of mental health. Participants generally take turns sharing personally efficacious recovery strategies, enabling others to learn and try for themselves. They can work through solutions as a group, develop and share personal plans, and offer feedback to one another. Participants support and encourage one another throughout programming, thereby reinforcing the process of internalization of the value of WRAP. The use of identified recovery strategies is socially endorsed amongst program participants and becomes progressively integrated for individual participants. Thus, throughout WRAP programming, participants shift toward autonomous behavior and away from controlled behavior. Theoretically, then, WRAP enhances participants' sense of relatedness, leading to advanced recovery outcomes.

Measurement of SDT Mediators

Within the general framework provided here, there are multiple ways to measure SDT constructs as mediators, depending on the research questions and hypotheses. Researchers may begin with existing scales that have been developed to measure SDT's three basic psychological needs and adapt them for adults with serious mental illness (for instance Ng et al. 2012; Sheldon and Hilpert 2012; Teixeira et al. 2012; Wilson et al. 2006; Vlachopoulos and Michailidou 2006). This may be the most expeditious approach; however, new measures and scales may need to be created to fit more specific purposes of research projects. For instance, rather than a more global measure of relatedness, researchers may want to measure a more narrow concept associated with normative beliefs about specific behaviors which influence a person's

internalization and integration of recovery strategies. For competence, researchers may be interested in measures of specific skills such as social cognition (Brekke et al. 2005) or problem-solving (Petros 2017), which are specifically relevant to persons with serious mental illness. As research advances, the tools to measure the constructs of SDT will become better operationalized, and the causal mechanisms of change in ISM interventions will become clearer.

Conclusion

ISM programs like WRAP engender integrated regulation of behaviors that are conducive to recovery. WRAP programming is structured to provide an autonomy-supportive environment that fosters relatedness amongst peer facilitators and fellow participants. People work together to build personalized plans for pursuing recovery and build competence throughout the program as they use trial and error to find effective strategies. In this way, the program offers a small-scale opportunity for participants to access nutrients for psychological needs of autonomy, competence, and relatedness; concurrently, WRAP provides a framework that participants can use to shape their larger environments to meet their psychological needs. Increased perceptions of autonomy, competence, and relatedness lead to changes in overall integration, recovery, and wellness.

ISM programs offer an array of approaches to support self-management (see Petros and Solomon 2015). Some, like WRAP and Pathways to Recovery, prioritize self-directed exploration to develop personalized recovery strategies (Petros and Solomon 2015). For these programs, SDT may best explain the mechanisms of change. Other ISM programs, like IMR, incorporate cognitive-behavioral strategies and utilize a didactic approach to facilitate skills-building (Mueser et al. 2006; Petros and Solomon 2015). These techniques are better explained by more mechanistic theories, such as operant and social cognitive theory, and the developers transparently identified additional conceptual underpinnings, including the transtheoretical model and the stress-vulnerability model (Mueser et al. 2006). Thus, while SDT applies broadly to all ISM programs, some may have more than one theoretical orientation.

Hybrid programs supporting self-management of mental and somatic health conditions have also flourished in the past decade, including programs like Integrated-IMR (I-IMR) and HARP. A systematic review of nine integrated self-management and health interventions for adults with serious mental illness revealed evidence of clinical effectiveness at improving self-management skills as well as improved attitudes and behaviors towards health behaviors (Whiteman et al. 2016). As self-management continues to be promoted in management of chronic somatic health

conditions generally (for instance Barlow et al. 2002; Brady et al. 2013) and more specifically for people with serious mental illness (for example Cabassa et al. 2017), SDT is progressively relevant to research on mental health, somatic health, and integrated self-management interventions.

Future research using the experimental therapeutic approach may use SDT to guide research design. Measuring perceptions of autonomy, competence, and relatedness, as well as the relative environmental supports for the same psychological constructs, may provide an indication of the causal mechanisms of change as well as direct strategies to enhance ISM interventions that underperform.

Compliance with Ethical Standards

Conflict of interest Ryan Petros and Phyllis Solomon declare that they have no conflict of interest.

Ethical Approval This article does not contain any studies with human participants performed by any of the authors.

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