Is the Construct of Relapse Heuristic, and Does It Advance Alcohol Use Disorder Clinical Practice?

STEPHEN A. MAISTO, PH.D.,^{a,*} KATIE WITKIEWITZ, PH.D.,^b DEZARIE MOSKAL, B.A.,^a & ADAM D. WILSON, M.S.^b

^a*Department of Psychology, Syracuse University, Syracuse, New York*

^b*Department of Psychology, University of New Mexico, Albuquerque, New Mexico*

ABSTRACT. Objective: Alcohol use disorder (AUD) relapse is a construct that has been of major clinical and research interest but has been inconsistently defined. The purpose of this study was to review the definitions of AUD relapse that have been used in clinical research as a basis for drawing conclusions about its heuristic value. **Method:** A systematic review of the literature was conducted on empirical studies that (a) were published in peer-reviewed journals, (b) were published between 2010 and 2015, (c) were written in English, and (d) provided a definition of alcohol relapse (or lapse) that was used in the study. **Results:** The review yielded 139 individual studies that met inclusion criteria. The studies showed wide variability in how relapse was defined and interpreted in

the literature, and there was little direct empirical or theoretical rationale provided for the definitions of relapse that were chosen. Furthermore, the concept of AUD relapse as a discrete state is not consistent with the empirical literature on the clinical course of alcohol consumption. **Conclusions:** We conclude that the heuristic value of AUD relapse as currently studied is low. An alternative approach that embeds the construct in theory and data on the clinical course of alcohol consumption and aligns with current trends in healthcare would seem to have a better chance of improving AUD clinical decision-making and knowledge about AUD in general. (*J. Stud. Alcohol Drugs*, 77, 849–858, 2016)

THE TERM *RELAPSE* is part of the common discourse with respect to addictive behaviors. For example, a simple Google search for either “relapse and addiction” or “relapse and alcohol” yields millions of results. The purpose of this article is to examine the use of the term *relapse* in the area of alcohol use/alcohol use disorder (AUD) change, whether by self-initiation, the use of mutual-help groups, formal treatment services, or some combination of the three. The ultimate goal of this line of inquiry is to appraise the heuristic value of the term *relapse* in advancing clinical research and treatment. *Heuristic value* in this article means value in aiding the discovery of knowledge about AUD clinical course through the generation of research. The article begins with an overview of conceptual definitions of AUD relapse followed by reporting the findings of a systematic review of recently published (2010–2015) empirical studies that have included relapse as an independent or dependent variable.

Definition of relapse

According to the online edition of the *Merriam-Webster Dictionary* (n.d.), “relapse” is derived from the Latin word *relabi*, which means “to slide back.” Relapse as a verb means “to become ill again after a period of improvement in health,” or “to return to a bad condition, form of behavior,

etc.” The noun form of relapse simply means a return of illness or a return to a former and undesirable condition.

The construct of relapse is often applied in reference to what typically are considered physical illnesses. In this context, the application of relapse to AUD seemed to advance rapidly following the recognition of alcoholism as a disease by the American Medical Association (American Medical Association, 1956). It is interesting to note that the current (fifth) edition of the American Psychiatric Association’s *Diagnostic and Statistical Manual of Mental Disorders* (DSM; American Psychiatric Association, 2013) mentions “relapse” only briefly, first in the context of noting that brain changes consequent of heavy substance use may help to explain the repeated relapses that often are observed in individuals who are diagnosed with substance use disorders, including AUD. “Relapse” also is mentioned, but is not defined, in the section on AUD development and course: “AUD has a variable clinical course that is characterized by periods of remission and relapse” (p. 493). This statement implies that “relapse” may be part of a dynamic change process.

Conceptual definitions of relapse proposed in the scholarly literature on AUD and other substance use disorders essentially have not strayed far from the dictionary definition. A number of authors have defined relapse as a recurrence of problematic alcohol use, often after a period of improvement (Brownell et al., 1986; Chung & Maisto, 2006; Witkiewitz & Marlatt, 2004). Some authors also have distinguished between a “lapse” and a relapse, where a lapse is typically defined as a single instance of use, a slip, or as a discrete outcome of any use (Brownell et al., 1986; Chung & Maisto, 2006; Witkiewitz & Marlatt, 2004). Earlier (Brownell et al., 1986; Prochaska et al., 1992) and more recent (Hendershot

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*Correspondence may be sent to Stephen A. Maisto at the Department of Psychology, Syracuse University, 430 Huntington Hall, Syracuse NY 13244, or via email at: samaisto@syr.edu.

et al., 2011; Kirchner et al., 2012; Shiffman, 2005; Witkiewitz & Marlatt, 2004) accounts of relapse have considered it to be part of a dynamic process and have included the behavioral change goal in defining lapse and relapse (Brendryen et al., 2013; Hendershot et al., 2011). In summary, conceptual definitions of relapse have viewed it both as an outcome and as a part of the process of change. In either case, the focus is on a reversion to a prior undesired behavioral pattern after some period of improvement (e.g., partial or full remission). Across the range of its conceptualizations, there have been inconsistencies in proposed specific definitions of relapse.

Given the content and inconsistency that characterize conceptual definitions of relapse, it seems most useful to think of relapse as a “meta-construct” (Barkley, 2014), an encompassing term that subsumes a few major, related dimensions. Relapse might be thought of as a meta-construct that includes alcohol consumption, biopsychosocial negative events that may be causally connected to different degrees to alcohol consumption (i.e., consequences), a “disease state” that is specified by a list of symptom criteria in the DSM, and also as determined by an individual’s goals for change (in patterns of alcohol use, most typically). If relapse is a meta-construct, then the question remains as to how it has been interpreted and defined in individual research studies and clinical contexts. Interpretation of the construct on the individual study level is fundamentally important because of its influence on research design, measurement, and the practical interpretation of findings.

Despite the importance of this question, there is no systematic review of the definitions of AUD relapse that have been used in individual research studies. Accordingly, in the next sections of this article, we present the methods and procedures followed in our conducting such a review and a summary of the findings.

The construct of alcohol use disorder relapse at the individual study level

As is evident from the conceptual and empirical work cited earlier, clinical scientists and practitioners have theorized about and have empirically studied AUD relapse for more than four decades. Nevertheless, to identify the latest definitions of relapse most commonly used by AUD clinical researchers, we systematically reviewed the literature published from 2010 to 2015. The majority of our review was exclusive to studies conducted in clinical contexts; however, in the rare case that naturalistic studies or epidemiological research was found using our search terms (which specified a component of treatment or intervention), they were considered. It is important to note that although naturalistic studies and epidemiological research was not the focus of this review, these areas have also grappled with the concept of relapse in defining the clinical course of AUD (e.g., the National Epidemiologic Survey on

Alcohol and Related Conditions study that investigated the prevalence and course of AUD in the general population; Caetano, 2006). The 5-year time span of our review was chosen because we determined that it would yield current information on the definitions of AUD relapse that researchers are using and still provide an adequate sample of studies to be seen as representative of the field, at least as it is reflected in English-language scholarly publications. In addition, this article builds on prior reviews of relapse and relapse prevention reported in studies from 2000 to 2010 (Hendershot et al., 2011) and from the 1980s to 2003 (Marlatt & Donovan, 2005; Witkiewitz & Marlatt, 2004).

Method

The systematic review of the literature on AUD relapse followed published guidelines in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Liberati et al., 2009; Moher et al., 2009). The electronic databases PsycINFO, PubMed, and Web of Science were searched up to December 2015 to identify potentially relevant articles. The following search terms were entered into each database: (“alcohol”) AND (“lapse” OR “relapse” OR “recovery” OR “remission” OR “recurrence” OR “response”) AND (“treatment” OR “intervention”).

The systematic review process included sequential reviewing in three stages: the title stage, the abstract stage, and the full-text stage. If the article appeared to meet the inclusion criteria of a stage, then the article was reviewed at the subsequent stage (Figure 1). Articles were selected for review if they (a) were published in peer-reviewed journals, (b) were published between 2010 and 2015, (c) were written in English, and (d) provided a definition of alcohol relapse (or lapse) that was used in the study. In some cases, articles were included when relapse was not explicitly defined but could be inferred based on how the authors described its measurement. Duplicates, case studies, non-empirical studies, studies on nonhuman participants, commentaries, book reviews, and editorials were excluded.

The relapse definition(s), study methodology (study design, study population, time frame), and relevant study results were extracted from each article selected for review. Articles were also searched for the authors’ justification or rationale for their cited definition of the AUD change points. When authors did not offer in-text justification but cited another article, the cited article was obtained and searched for justification of the relapse definition.

Results

Summary of findings on relapse

Tables 1 through 3 provide a summary of the findings from the literature review on relapse, which yielded 139

FIGURE 1. Flowchart of systematic search procedures for alcohol change points review. No alcohol change point includes articles in which an operationalization of any alcohol change point (i.e., response, remission, lapse/relapse, and recurrence) was absent from the article and/or was not used in the study.

studies (see the list in the online-only supplemental material for references of articles included in the review). Table 1 provides definitions of relapse used by the studies that examined alcohol use and used the terms *relapse* or *relapse to heavy drinking* or *heavy drinking relapse*. Table 2 provides definitions that were used in studies that considered “lapses” or “slips” as distinct from alcohol relapse. Table 3 provides definitions of relapse used by the studies that examined substance use more broadly, including use of alcohol and other drugs.

The large majority of participants in the studies cited in Tables 1 through 3 were adults or adolescents in treatment for AUD and with a DSM-IV diagnosis of alcohol dependence. Therefore, these individuals’ alcohol problems tended to be on the higher end of the severity continuum. The definitions of relapse (as well as lapse, in some cases) showed a high degree of variability. As seen in Tables 1 and 3, there were 25 different definitions used to characterize alcohol relapse and 7 different definitions used to characterize substance use relapse, as well as a number of studies that did

TABLE 1. Definitions of alcohol “relapse” or “relapse to heavy drinking” or “heavy drinking relapse” change point across studies

Definition of relapse	Studies (First author, date) using definition	Studies that provided rationale for definition
Any drinking	Arnedt, 2011; Bauer, 2012; Brown, 2010; Cardenas, 2011; Clarke, 2011; Czapla, 2015; Dahlgren, 2011; Deruytter, 2013; Diehl, 2010; Dingwall, 2011; Dolan, 2013; Durazzo, 2011; Durazzo, 2015; Elholm, 2011; Evren, 2010; Farren, 2010; Garland, 2012; Heffner, 2011; Helander, 2012; Hennessey, 2015; Higley, 2011; Higuchi 2015; Hitschfeld, 2015; Hoepfner, 2011; Jakubczyk, 2013; Joos, 2013; Jurado-Barba, 2015; Kelly, 2011; Koeter, 2010; Kolla, 2015; Kopera, 2015; Loeber, 2010; Mutschler, 2010; Mutschler, 2013; Müller, 2015; Paparrigopoulos, 2011; Potts, 2013; Preuss, 2012; Ramo, 2012; Randles, 2013; Rando, 2011; Rodrigue, 2013a; Rodrigue, 2013b; Schneekloth, 2012; Seo, 2013; Sinha, 2011; Smith, 2014; Ulrichsen, 2010; Weinberger, 2015; Wiers, 2015; Winham, 2015; Witteman, 2015; Young, 2011	Arnedt, 2011; Dahlgren, 2011; Deruytter, 2013; Diehl, 2010; Durazzo, 2015; Garland, 2012; Hoepfner, 2011; Jakubczyk, 2013; Kelly, 2011; Mutschler, 2010; Ramo, 2012; Rodrigue, 2013a; Rodrigue, 2013b
Consumption of 2+ standard drinks of alcohol	De Sousa, 2014	
Consumption of 4+ standard drinks of alcohol	Nieva, 2010	
Consumption of 6+ standard drinks on a single day	Mattson, 2010; Witteman, 2015	
Consumption of any alcohol on 3+ consecutive days	Demirbas, 2012	
Consumption of alcohol for 7+ consecutive days	Wölwer, 2011	
Consumption of 5+ drinks of alcohol on 1 day or drinking alcohol 5+ days within 1 week	Charney, 2015	Charney, 2015
Initial lapse followed by repeated drinking	Papachristou, 2014; Stuyt, 2014	
Re-instatement of symptoms of AUD	Petit, 2014; Pilowsky, 2013; Weinberger, 2015; Xie, 2010	Petit, 2014
AUDIT score greater than 0	Picci, 2014	

Table continued

not explicitly define the term. There were seven definitions used to characterize alcohol lapses (Table 2), and only six studies cited in Tables 1 and 2 included a required period of abstinence in the definition of relapse or lapse (Czapla et al., 2015; Evren et al., 2012; Holt et al., 2012; Potts et al., 2013; Ramo et al., 2012; Rice et al., 2013). Across Tables 1 through 3, 85 studies (61.2%) defined relapse as “any use,” whether it was of alcohol only or of any other drug not as prescribed. Many studies (38; 27.3%) defined relapse as a return to some level of “heavy drinking,” where “heavy” was variously defined. Some studies focused on the 4+/5+ drinks per occasion for women/men (e.g., Agosti et al., 2012; Bujarski et al., 2013; de Bejczy et al., 2014; Garbutt et al., 2010); some studies focused on 4+, 5+, or 6+ drinks for males or females (e.g., Schellekens et al., 2015); and other studies focused on various levels of grams of alcohol per day (e.g., Bach et al., 2015; Berner et al., 2014; Charlet et al., 2014; Hartl et al., 2011; Kiefer et al., 2011). The distinction between lapse/slip (defined as “any use” or in some cases defined as less than the relapse criteria) and relapse (defined as a higher level of use, such as heavy drinking or consecutive days of use) was used by 13 (9.4%) of the studies.

A total of 31 (22.3%) of the studies incorporated a dimension besides alcohol use in their definition of relapse, but that additional dimension was other drug use in all but two of the instances (Bauer et al., 2012; Gowin et al., 2015). Fewer than 5% of studies used the DSM AUD symptom criteria to define relapse ($n = 4$, 2.9%), defined whether relapse had occurred contingent on a participant’s pre-treatment functioning ($n = 4$, 2.9%), or defined a relapse occurrence contingent on the participant’s treatment goals ($n = 1$; Takeda et al., 2013).

Discussion

Relapse as a heuristic

The findings of the literature review allow an empirically based consideration of the heuristic value of the (meta) construct of AUD “relapse.” Rotter (1990) proposed four qualities of a construct that enhance its heuristic value, two of which are especially relevant to this article. The first factor is a definition that is of sufficient precision to allow measurement of the construct that is clear and is generally

TABLE 1. *Continued*

Definition of relapse	Studies (First author, date) using definition	Studies that provided rationale for definition
Any heavy drinking		
Heavy drinking = 4+/5+ drinks for females/males	Agosti, 2012; Anton, 2011; Arnedt, 2011; Bean, 2013; Brower, 2011; Bujarski, 2013; de Bejczy, 2014; Finn, 2012; Garbutt, 2010; Guardia, 2011; Joos, 2013; Likhitsathian, 2013; Martinotti, 2010a; Martinotti, 2010b; Martinotti, 2014; Morley, 2014; Oslin, 2015; Pagano, 2015; Pettinati, 2010; Reinhard, 2015; Richter, 2012; Schacht, 2013; Schellekens, 2015; Seo, 2013; Snelleman, 2015; Wilens, 2011	Arnedt, 2011; Finn, 2012; Guardia, 2011; Martinotti, 2010a; Martinotti, 2010b; Martinotti, 2014; Pagano, 2015
Heavy drinking = 4+/6+ drinks for females/males for 3+days	Durazzo, 2011; Durazzo, 2010; Morley, 2010	Durazzo, 2011; Durazzo, 2010
Heavy drinking = 5+ drinks	Aguiar, 2012; Charney, 2010	
Heavy drinking $\geq$ 48g/60g for females/males	Bach, 2015; Berner, 2014; Kiefer, 2011; Kiefer, 2015	Bach, 2015; Kiefer, 2011
Heavy drinking $\geq$ 40g/60g for females/males	Charlet, 2014	Charlet, 2014
Heavy drinking $\geq$ 30g/60g for females/males	Hartl, 2011	
Undefined amount of "heavy drinking"	Donoghue, 2015	
Alcohol use that came to the clinical attention of providers	Rice, 2013	
Resuming alcohol use to the previous pattern of use	da Silva, 2013; Dore, 2011; Evren, 2012; Klauss, 2014	Evren, 2012
Continued drug and alcohol misuse	Buhl, 2011	
High risk based on questionnaire after at least 1 month of reduced risk status via questionnaire	Ceperich, 2011	
Number of previous detoxifications/admission to detox service	Baars, 2013	Baars, 2013
Declared alcohol consumption associated with the presence of alcohol-related damage, either physical or mental	Egawa, 2014	
Required period of abstinence in definition	Czapla, 2015; Evren, 2012; Potts, 2013; Ramo, 2012; Rice, 2013	Evren, 2012; Ramo, 2012
Violation of agreed upon drinking goal	Takeda, 2013	
Report of past-year alcohol-related problem on Patient Health Questionnaire	Williams, 2015	

Notes: AUD = alcohol use disorder; AUDIT = Alcohol Use Disorder Identification Test.

accepted as reasonable. The second factor is the embedding of the construct in a larger theoretical context, which allows for distinctions between the construct and others with which it might be confused, as well as specification of connections between the construct and others.

Relevant to Rotter's (1990) first factor, definitions of relapse tend to be clear and some could not be more straightforward (e.g., "any use"). However, the definitions of relapse that appeared in the published literature in the last 5 years have not won general acceptance or agreement, as evidenced by the range of definitions that have been used during that time. Therefore, definitions of relapse used in published empirical studies are clear and can be operationalized adequately, but there is considerable lack of consistency across them, especially when moving beyond the modal definition of "any use" and its variants (these definitions also have been labeled "lapse" or a "slip" in some studies; see Table 2). Thus, a large volume of research on relapse has been generated, which is consistent with good heuristic value, but knowledge about AUD clinical course has not advanced

proportionately because the use of different definitions of relapse makes it difficult to build on findings across studies.

Rotter's (1990) second factor is an embedding in a broader theoretical context. Clearly, definitions of AUD relapse tend not to meet this criterion. Authors infrequently cited a theoretical or even an empirical precedent for the definitions of relapse used. It could be argued that exceptions are the large minority of studies that defined relapse (or "lapse" or "slip") as any use of alcohol or other drugs, in that such definitions imply application of the medical disease model of AUD (e.g., Miller, 1996; Moskalewicz, 2012). Yet, none of the "any use" studies were explicitly guided by a medical disease model of relapse.

What to do with the construct of alcohol use disorder relapse

Despite the evidence for the utility of the construct of relapse being weak, it is highly unlikely that the relapse construct will be abandoned given the deep penetration

TABLE 2. Definitions of alcohol “lapse” or “slip” change point across studies

Definition of relapse	Studies (First author, date) using definition	Studies that provided rationale for definition
Any drinking	Charney, 2010; de Bejczy, 2014; Dolan, 2013; Donoghue, 2015; Holt, 2012; Lahmek, 2011; Morley, 2014; Morley, 2010; Papachristou, 2014; Rice, 2013; Witkiewitz, 2015; Zikos, 2010	— ^a
Consumption of less than 2 standard drinks of alcohol	De Sousa, 2014	— ^a
Consumption of less than 4 standard drinks of alcohol	Nieva, 2010	— ^a
Consumption of 4+/5+ standard drinks of alcohol for females/males	Witkiewitz, 2015	— ^a
Consumption of less than 48 g/60 g for females/males	Richter, 2012	— ^a
Consumption of any alcohol on fewer than 3 consecutive days	Demirbas, 2012	— ^a
Nonproblematic alcohol use <2/<3 drinks for females/males	Deruytter, 2013	— ^a
Required abstinence in definition	Holt, 2012; Rice, 2013	— ^a

^aThe studies in this table did not provide a rationale for definition.

that the term has in both professional and lay circles and the apparent (but illusory) facility of communication that use of the term *relapse* offers. If the construct of relapse retains its popularity, then it is important to determine ways to make it more valuable heuristically. Theory and empirical evidence suggest at least three ways to increase the heuristic value of the construct of relapse: (a) using a theoretical conceptualization of AUD relapse to guide its study, (b) retaining of the construct of lapse/relapse as part of the process of AUD change, and (c) arriving at a definition of relapse that can achieve general acceptance through its empirical validation.

Using a conceptualization of alcohol use disorder lapse/relapse to guide its study

A rationale for the definition of lapse or relapse that was used was provided in only 33 of the 139 studies (23.7%) reviewed. Furthermore, we noted earlier that lack of consistent use of theory has likely led to the large variability in definitions of AUD relapse used in empirical studies. This also applies to definitions of “lapse” (or “slip”) when the latter terms went beyond “any use.” This likely is due to the lack of a clear concept of any threshold of severity of a problem behavior that is at least implied by distinguishing between a lapse and a relapse. However, it is impossible to do more than speculate reasons (failure of a presumed self-regulation mechanism?) for the different thresholds (e.g., of quantity and frequency of alcohol use) of first instance of use or a slip (Brownell et al., 1986; Chung & Maisto, 2006; Witkiewitz & Marlatt, 2004) without a clear conceptualization of the AUD clinical course that is being followed and of “relapse” itself.

A related consequence of disconnection of empirical studies from conceptualization of AUD clinical course is the high

frequency of failure to specify a period of remission (only six studies specified a period of remission in our review). A period of remission (abstinence) may be implied in the “time to first drink/drug use” and related (e.g., “any use”) definitions, but it typically is not specified in this literature. Many of the reviewed studies were treatment studies, wherein presumably a period of abstinence was achieved. However, the occurrence of treatment does not necessarily indicate remission, given that individuals often continue to drink, sometimes heavily, during the treatment phase and thus never achieve remission (e.g., Witkiewitz et al., 2010).

In summary, it seems that empirical study of the constructs of AUD lapse and relapse requires clear connection to conceptualizations of AUD clinical course. Focusing on connection to AUD clinical course could advance knowledge of change in AUD and its maintenance and consequent improvement in treatment intervention effectiveness.

Retention of lapse/relapse as part of a process of alcohol use disorder change

A good candidate for a working theory to guide AUD relapse research is to consider AUD lapse/relapse as part of the process of AUD clinical course and change. As reviewed by Maisto and colleagues (2014), the clinical course of alcohol consumption is heterogeneous between individuals and within individuals over time and follows a dynamic pattern. Thus, it is important for AUD clinical course research to include more near-real time data collection, the use of statistical methods that can model dynamic, person-centered data, and interpretation of such data in the context of patient characteristics and treatment goals. It is also important to monitor the course of other outcomes in addition to alcohol consumption, given that AUD is a disorder whose development, maintenance, and modification is determined by a

TABLE 3. Definitions of substance use change point across studies

Definition of relapse	Studies (First author, date) using definition	Studies that provided rationale for definition
Any substance use	Adinoff, 2010; Angres, 2013; Benegal, 2013; Boddapati, 2014; Boog, 2014; Bowen, 2014; Chih, 2014a; Chih, 2014b; Ciesla, 2010; Deveau, 2010; Gonzales, 2012; Gowin, 2015; Hoepfner, 2011; Kelly, 2011; LePage, 2012; Mattson, 2010; Moore, 2014; Ramo, 2012; Saban, 2013; Warner, 2013	Gowin, 2015; Hoepfner, 2011; Kelly, 2011; LePage, 2012; Moore, 2014; Ramo, 2012
Use of prescription drugs above recommended dose	Ramo, 2012	Ramo, 2012
Patients previously detoxified returned to treatment	Sau, 2013	
More than 2 episodes of use or persistent use	Stuyt, 2014	
Admitted to treatment or positive drug screen	Verduin, 2013	
Resuming previous pattern of substance use	Gonzales, 2012; Nordfjærn, 2011; van der Woerd, 2010	
Admission to treatment for acute services (detoxification)	Bernstein, 2015	

biopsychosocial array of factors that often are correlated. There is a distinction made between relapse as an endpoint (outcome) and as a process (of behavior change), with the emphasis on relapse as a process.

As we noted earlier, there is conceptual precedence for this view in the AUD area (e.g., Brownell et al., 1986; Hendershot et al., 2011; Prochaska et al., 1992; Witkiewitz & Marlatt, 2004) that spans three decades. In fact, a major conceptual statement and associated research agenda that represents this view is the “change points” framework that Frank and colleagues (1991) proposed for the study of the clinical course of depression. Nevertheless, all of the studies identified in this review investigated “relapse” (or lapse) as an outcome or endpoint isolated from course of change. This is somewhat ironic in cases where “lapses” or “slips” were investigated, because measuring such events implies that the occurrence of a less severe version of the problem behavior may precede the occurrence of a relapse as part of the usual process of AUD clinical course. In summary, studies of AUD relapse would be more consistent with what is known about AUD clinical course if they maintained the distinction between relapse as a process and any drinking or some level of drinking as a specific outcome.

Studying relapse as a process would seem to require a longitudinal design that allows measurement of multiple relapses and their sequelae over a given span of time. For example, Kirchner et al. (2012) conducted secondary analyses of smoking cessation treatment outcome data in which 203 smokers achieved at least 1 day of initial smoking abstinence (“remission”) during a 6-week period of study. Ecological momentary assessment methods were used to track each individual’s lapses (operationally defined in the protocol) in near-real time and to determine how multiple lapses may have led ultimately to relapse (also operationally defined internally). In this study, therefore, lapse was

used as both predictor and dependent variable, and relapse was the change course outcome. Cognitive and affective factors suggested by Marlatt and Gordon’s (1985; also see Witkiewitz & Marlatt, 2004) concept of the “abstinence violation effect” were measured following each lapse. Recurrent event survival analyses were used to test theoretically driven hypotheses about how the abstinence violation effect following a given lapse would be related to the timing of any subsequent lapse and, in some cases, ultimately to a relapse.

Empirical validation of relapse definitions

We identified only one case (Ramo et al., 2012) in which evidence was presented that a definition of relapse used was chosen based all or in part on there being empirical evidence for its utility. Specifically, Ramo and colleagues (2012) defined an *initial relapse* as the first use of any drugs or alcohol following adolescent substance use treatment, based on research demonstrating that initial use often results in either a gradual or rapid return to use for adolescents (Brown et al., 2000). The remaining studies did not provide clear empirical evidence in support of specific relapse definitions. This is a significant problem in the AUD relapse literature because widespread acceptance of any definition of lapse/relapse likely will occur only following empirical support for the construct validity of any particular definition. Furthermore, as noted, the utility of the construct of relapse as part of a change process depends on its construct validation to serve that role.

Several recent empirical studies have moved in this direction through their design to validate empirical endpoints for alcohol treatment outcomes, using, in part, the National Institute on Alcohol Abuse and Alcoholism (2004) definition of *heavy drinking* as 4+ drinks per occasion for women

and 5+ drinks per occasion for men (e.g., Falk et al., 2010). Other studies have used secondary analyses to empirically determine the value of different durations of posttreatment alcohol abstinence in predicting longer-term alcohol use (Stout, 2000) and the value of multiple relapse episodes (relapse defined in consumption terms) in predicting drinking patterns (Wang et al., 2002). These kinds of analyses could provide an empirical basis for definitions of lapse and relapse that correspond with a prediction of clinical outcomes and that may actually aid in clinical decision-making. That is, the occurrence of a relapse has been viewed as a signal (predictor) that individuals are less likely to achieve longer term outcome goals (in change point terms, “full remission” or, typically later, “recovery”) unless some kind of intervention, whether self-initiated or otherwise, occurs. Therefore, demonstration of the utility of a definition of relapse first requires that an outcome criterion is selected along with a target outcome time.

The definition of an outcome criterion is not a simple task, as several factors should be considered in determining the definition of outcome. It would seem that such a definition should be theoretically and, most important, clinically meaningful. Theoretical meaning would be achieved if the definition of outcome was derived from a conceptualization of AUD clinical course, and there are several such approaches that could be followed, such as medical disease model, behavioral/cognitive behavioral, or 12-step (e.g., Miller & Hester, 2002). Clinical significance would be determined based on consideration of several dimensions. The first of these is perspective (i.e., from whose point of view outcome is measured). Recent work has considered the view of patients, the patient's family members and friends, as well as treatment providers, in defining clinically significant outcomes (Kaskutas et al., 2014; Neale et al., 2014). As Cisler et al. (2005) noted, outcome may be defined differently from each of these perspectives, with different degrees of overlap in definition. If the field were to have some consensus regarding definitions of clinically significant outcomes, then the empirical work to determine which definitions of lapse and relapse are most useful in predicting outcome could be conducted.

The final step in empirical validation of relapse definitions is evaluating its construct validity by testing the definition's value in predicting the outcome criterion in question. To the degree that a definition of relapse can reliably predict a clinically meaningful outcome, it aids clinical decision-making. Knowing that an individual has “relapsed” at time t , or has relapsed for the N th time at time t , informs about the likelihood of a given clinical status at time $t + 1$ and thus helps to determine if and what kind of change might be needed in a treatment plan. Note that the logic of this procedure of validating definitions of relapse is similar to that followed in establishing the validity of psychiatric diagnoses (e.g., Kraemer, 2013).

Clinical implications

The approach to the study of relapse taken in this article is generally consistent with the current trend in healthcare in several ways, the first of which is “measurement-based care.” Broadly, in measurement-based care, treatment is to a designated target (goal) and outcomes are monitored systematically over time to provide data that are used directly in treatment planning until a patient's goal(s) is achieved (Bauer et al., 2014). The second way in which this approach is consistent with general trends in healthcare is in taking a “patient-centered” approach to care. According to the Institute of Medicine (2001), a treatment is patient centered when it is responsive to a patient's individual preferences, needs, and values. The third way in which the approach is consistent with general trends in healthcare is that treatment decisions are guided by data through the use of empirically developed algorithms (also called “adaptive treatment” designs; e.g., McKay et al., 2011).

There is considerable research needed in several areas to improve clinical decision-making in AUD treatment. Consistent with attention to lapse/relapse and representing part of a process of the AUD change process, more near-real time studies of AUD clinical course are needed, along with the development and refinement of algorithms connecting such data in specific ways to treatment planning. There also is a need for a larger and more diverse AUD clinical course database that could be used for contextualizing treatment decisions. Future research on AUD clinical course linked directly to clinical decision-making is more likely to advance AUD treatment effectiveness than is continued focus on a static, end-point concept of AUD “relapse.”

Conclusions

Previous theorizing and data on AUD relapse show that the construct has had limited research and clinical value. There are a number of possible explanations for the lack of utility of the construct of AUD relapse, some of which can be addressed through a systematic program of research. However, rather than emphasizing relapse as an end point, an alternative approach that embeds lapse/relapse in theory about the clinical course of alcohol consumption and aligns with current trends in healthcare would seem to have a better chance of improving AUD clinical decision-making and knowledge about AUD in general.

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