

2016

# A 50-year review of psychological reactance theory: Do not read this article

Benjamin Rosenberg

*Chapman University*, [benjamin.rosenberg@dominican.edu](mailto:benjamin.rosenberg@dominican.edu)

Jason T. Siegel

*Claremont Graduate University*

**Survey: Let us know how this paper benefits you.**

## Recommended Citation

Rosenberg, Benjamin and Siegel, Jason T., "A 50-year review of psychological reactance theory: Do not read this article" (2016). *Psychology | Faculty Scholarship*. 3.

<https://scholar.dominican.edu/psychology-faculty-scholarship/3>

This Article is brought to you for free and open access by the Psychology | Faculty Collections at Dominican Scholar. It has been accepted for inclusion in Psychology | Faculty Scholarship by an authorized administrator of Dominican Scholar. For more information, please contact [michael.pujals@dominican.edu](mailto:michael.pujals@dominican.edu).

## Abstract

Psychological reactance theory (PRT; Brehm, 1966) posits that when something threatens or eliminates people's freedom of behavior, they experience *psychological reactance*, a motivational state that drives freedom restoration. Complementing recent, discipline-specific reviews (e.g., Quick, Shen, & Dillard, 2013; Steindl, Jonas, Sittenthaler, Traut-Mattausch, & Greenberg, 2015), the current analysis integrates PRT research across fields in which it has flourished: social psychology and clinical psychology, as well as communication research. Moreover, the current review offers a rare synthesis of existing reactance measures. We outline five overlapping waves in the PRT literature: Wave 1: Theory proposal and testing, Wave 2: Contributions from clinical psychology, Wave 3: Contributions from communication research, Wave 4: Measurement of reactance, and Wave 5: Return to motivation. As part of our description of Wave 5, we detail scholars' renewed focus on motivational aspects of the framework, and the ways in which this return to PRT's motivational roots is allowing researchers to push its accuracy and applicability forward. We use this research that is already occurring in Wave 5 to outline three specific ways in which scholars can direct the continued application of motivation science to the advancement of PRT. Finally, as we outline in a future directions sections for each Wave, assimilating this research illustrates the ways in which an emphasis on motivation can expand and explain PRT research in communication, clinical psychology, and measurement.

A 50-year review of psychological reactance theory: Do not read this article

Roughly 50 years ago, Brehm (1966) proposed psychological reactance theory (PRT). According to PRT, freedom of behavior is an important, beneficial, and pervasive aspect of people's lives; when that freedom is threatened, they become motivated to restore it (Brehm, 1966). This motivation to restore threatened freedom, *psychological reactance*, is PRT's core construct, and has catalyzed over five decades of research on the topic. Complementing recent, discipline-specific comprehensive reviews (Quick et al., 2013; Steindl et al., 2015), in the current analysis, we amalgamate PRT research across the multiple fields in which it has flourished. As a result of assimilating all of this research, we outline five prominent, overlapping waves in the PRT literature: Wave 1: Theory proposal and testing, Wave 2: Contributions from clinical psychology, Wave 3: Contributions from communication research, Wave 4: Measurement of reactance, and Wave 5: Return to motivation. As part of Wave 5, we indicate several possibilities for continued PRT research, such as examining experiences other than threats to valued behaviors that arouse reactance (e.g., identity threat, Kray, Thompson, & Galinsky, 2001). In addition, as a testament to the explanatory power of motivation science, we suggest that a focus on the motivational underpinnings of PRT can influence scholars in social and clinical psychology, communication, and measurement to continue advancement of the theory.

### **Wave 1: Theory Proposal and Testing**

Psychological reactance theory (Brehm, 1966) was born out of the tradition of cognitive inconsistency theories (for a recent review see Proulx, Inzlicht, & Harmon-Jones, 2012), and more specifically, out of cognitive dissonance theory (Festinger, 1957). Indeed, Festinger was Brehm's dissertation advisor (Chadee, 2011), and Brehm (1956) published one of the first empirical tests of cognitive dissonance. Both cognitive dissonance and PRT are focused on

motivational arousal and reduction; however, Brehm (1966) focused on a specific motivation—the motivation to maintain the freedom to choose when and how to behave. Following Brehm's proposal and initial testing of PRT (e.g., Brehm, 1966; Wicklund & Brehm, 1968), researchers turned to further assessment and clarification of its assumptions and core components.

### **Assumptions of PRT**

Psychological reactance theory is based on two assumptions. First, PRT assumes people have a set of free behaviors they believe they can enact (Brehm, 1966). According to Brehm, *free behaviors* are acts people have engaged in previously, are currently engaged in, and could be engaged in the future. The second assumption of PRT is that when people's free behaviors are threatened or eliminated, they become motivated to restore their freedom. To be sure, people do not *desire* freedom, but its loss is motivationally arousing (Brehm, 1966). These two assumptions result in numerous predictions about the characteristics of the freedoms and threats that arouse reactance, as well as the outcomes of reactance (for review see Brehm & Brehm, 1981).

### **Components of PRT**

For purposes of clarity, researchers have broken PRT into its component pieces and modeled it based on order of occurrence (e.g., Dillard & Shen, 2005): a) presence of freedom, b) elimination or threat to freedom, c) arousal of reactance, and d) restoration of freedom.

**Freedoms.** The first component of PRT comes from the assumption that people have sets of *free behaviors* in which they can engage in the present or future (Brehm, 1966). People do not consider all behaviors as freedoms; they exist only when two conditions are met: people are *aware* of the freedom (i.e., know it exists) and they feel *capable* of enacting it. Moreover, freedoms are subjective (Brehm & Brehm, 1981): if people think they have the freedom to do something and feel they can enact it, then that freedom exists (e.g., Wicklund & Brehm, 1968).

**Elimination and threats to freedom.** The second core component of PRT comes from the assumption that freedom restriction is aversive (Brehm, 1966) and creates a motivation to restore the lost freedom (i.e., psychological reactance). Anything that completely blocks people from performing a behavior or holding a certain position constitutes *elimination* of freedom (e.g., outright bans, Mazis, Settle, & Leslie, 1973). Additionally, anything that impedes, but does not eliminate, freedom is a *threat* (e.g., attempted social influence, Brehm, 1966). As an interesting caveat, people may interpret acts that are typically beneficial as threats to their freedom to act as they choose. For instance, Krishnan and Carment (1979) found that having a confederate help participants on a task pressured them to return the favor, which aroused reactance by threatening their freedom to help or not (for similar results see Nemeth, 1970).

**Arousal of reactance.** Two broad factors determine how much reactance people will feel from a given threat: characteristics of the *freedom* and of the *threat* itself (Brehm, 1966).

**Characteristics of the freedom.** Brehm and Brehm (1981) suggested that the *proportion* of behaviors threatened and the *importance* of the threatened freedom would determine the amount of reactance a threat arouses. Despite initial backing (e.g., Wicklund, Slattum, & Solomon, 1970), few subsequent studies have examined the prediction that the greater the proportion and number of freedoms threatened, the more reactance arousal (for an unsupportive exception see Grabitz-Gniech, Auslitz, & Grabitz, 1975). Brehm (1966) also stated when people perceive a given freedom is uniquely able to fulfill a need, a threat to that freedom will arouse greater reactance than when other freedoms may also fulfill the same need. However, research has rarely examined this proposal (for a supportive exception see Goldman & Wallis, 1979).

**Characteristics of the threat.** Brehm (1966) postulated a direct relationship between the severity of a threat and the amount of reactance aroused—more severe threats lead to greater

reactance. Early empirical backing for this idea came from Heilman (1976), who found that more intense social influence attempts instigated greater oppositional behavior than less intense attempts (for similar results see Rains & Turner, 2007). These and numerous other studies indicate that in a range of situations, threats of high magnitude arouse greater reactance than threats of lower magnitude (e.g., Organ, 1974).

Additionally, people's perception that a threatening agent is explicitly trying to persuade them will increase reactance arousal (Brehm, 1966). In one study, Heller, Pallak, and Picek (1973) manipulated a confederate's intent to influence participants' attitudes toward a nuclear power plant; results suggested that compared to low-intent confederates, high-intent confederates caused participants' attitudes to go strongly opposite to the advocated position (for similar results see Jones & Brehm, 1970). A meta-analysis by Benoit (1998) confirmed this result, showing that forewarning of a message's persuasive intent decreased postmessage attitude change.

As a final means of reactance arousal, Brehm (1966) hypothesized threats did not have to be directed at people to induce reactance and the accompanying efforts to restore freedom. Andreoli and colleagues (1974) presented evidence for reactance due to an "implied threat" (p. 765), showing that simply listening to a threat to someone else's freedom was sufficient to change people's ratings of a conversation topic because they anticipated losing their own freedom to choose a topic in the future (for similar results see Pallak & Heller, 1971). More recent evidence shows that simply observing or reading about a threat to another person's freedom arouses a mix of threat and negative emotions (i.e., vicarious reactance, Steindl et al., 2015). In a related development, Sittenthaler, Jonas, and Traut-Mattausch (2016) suggested that the processes underlying vicarious- and self-reactance processes are distinct: restricting people's

freedom resulted in an immediate spike in physiological data, whereas vicarious reactance delayed this increase (for review see Steindl et al., 2015).

**Restoration of freedom: Behavioral outcomes.** After people experience elimination or threat to freedom, reactance manifests in two main ways (Brehm & Brehm, 1981). The most straightforward form of reactance involves engaging in the restricted behavior (i.e., *boomerang effect*, Brehm, 1966). For instance, when the drinking age increased from 18 to 21, newly underage college students (i.e., whose freedom to drink was now restricted) drank more than adult students (Engs & Hanson, 1989)—a pattern in contrast to 30 years of prior research. When people are unable to engage in the restricted behavior, they can reestablish freedom by social implication (e.g., seeing someone else engage in a similar behavior; Brehm & Brehm, 1981).

**Restoration of freedom: Subjective outcomes.** In addition to these behavioral outcomes, there are a host of subjective responses people exhibit when they experience reactance. For one, when people's freedom is threatened, their desire for the threatened behavior increases, as does its attractiveness (Brehm & Rozen, 1971; Brehm, Stires, Sensenig, & Shaban, 1966). People can also reduce the discomfort associated with reactance by showing hostility toward (e.g., Nezelek & Brehm, 1975), or derogating (e.g., Rains, 2013), the source of a threat.

**When reactance reduction fails.** In addition to these methods of reactance reduction, there are times when people try but ultimately fail to reduce reactance (Brehm & Brehm, 1981). When this happens, reactance arousal will may cease, and people may also begin to feel a sense of lost control or surrender. This theorizing drew mostly on the idea of *learned helplessness* (Seligman, 1975), wherein people acknowledge that a threat to freedom exists, but accept their inability to overcome the threat and reestablish freedom. Mikulincer (1988) tested the relationship between difficulty of restoration and the persistence of reactance effects, showing

that when people perceive freedom restoration as moderately difficult, they are motivated to seek restoration. If, on the other hand, people realize restoring freedom is impossible, their motivation to restore it will be low (for similar results see Baum & Gatchel, 1981).

In a related development, scholars began to consider the ways in which various personality traits affect reactance arousal (e.g., locus of control, Rotter, 1966). For instance, Rhodewalt and Marcroft (1988) showed that people with Type A personality (i.e., extreme achievement striving, time urgency) showed considerable reactance when a behavioral freedom was blocked, whereas Type Bs (i.e., enjoy achievement, less hostile, work steadily) did not experience reactance. This and other similar results (for review see Brehm & Brehm, 1981) indicated a broader moderator of reactance arousal—perceived ability to cope with a threat to freedom. This analysis aligns with work by Lazarus and Folkman (1984; for review see Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 2000), which suggests that people engage in two processes (i.e., primary and secondary appraisal) that allow them to decide if a situation is threatening (i.e., may lead to harm or loss) or challenging (i.e., may lead to mastery or benefit; for a similar analysis see Brehm & Self, 1989).

### **Wave 2: Contributions from Clinical Psychology**

With the preponderance of evidence supporting PRT, Brehm and Brehm (1981) helped prompt Wave 2 of PRT scholarship by noting that the construct of psychological reactance had considerable potential in clinical psychology (also see S.S. Brehm, 1976). One outcome of the expansion of reactance into clinical psychology was that scholars reconceptualized it as a trait (for review see Shoham, Trost, & Rohrbaugh, 2004), instead of Brehm's (1966) momentary state variable. As Kelly and Nauta (1997) stated, trait reactance is the “consistent tendency to perceive and react to situations as if one's freedoms were being threatened” (p. 1124). Put differently,



based on differing levels of trait reactance, people may be more or less inclined to experience the same stimuli as a freedom threat. Guided by this thinking, clinicians delineated three interrelated approaches to addressing and understanding client reactance.

### **Perspectives on Reactance in Clinical Psychology**

**Reactance as a moderator.** The first approach indicates that trait reactance moderates therapeutic success (for review see Shoham et al., 2004). When clients perceive therapists' recommendations as threatening their freedom, they become inclined to resist influence—thus undermining therapeutic effectiveness (e.g., Tracey, Ellickson, & Sherry, 1989). For instance, in a study on procrastination and test anxiety, regardless of type of treatment received, patients high in trait reactance showed less satisfaction and expectation of change than those low in reactance (Dowd et al., 1988). Moreover, patients higher in reactance proneness tend to show decreased compliance with therapy (e.g., Seibel & Dowd, 1999), antidepressant treatment (e.g., De las Cuevas, Peñate, & Sanz, 2014), and medical recommendations (e.g., Fogarty, 1997). Overall, patients high in trait reactance worse prognoses than those who are less reactant (Beutler, Moleiro, & Talebi, 2002; for discussion see Cautilli, Riley-Tillman, Axelrod, & Himeline, 2005).

**Overcoming reactance in therapy.** A second approach among clinicians has focused on avoiding the negative outcomes outlined above. On one end of this continuum, researchers seek to prevent reactance arousal, and to enhance therapeutic effectiveness, by offering clients free choice in therapy (e.g., Beutler, 1979). Studies using this technique have been generally supportive (e.g., Devine & Fernald, 1973). For instance, students given a choice in treatment reported greater perceived value and relaxation than those assigned to a specific treatment (Gordon, 1976). Instead of circumventing reactance arousal, an additional method encourages its arousal (for discussion see Tennen, Rohrbaugh, Press, & White, 1981), using paradoxical

interventions (i.e., those that encourage symptomatic behavior; see Dowd & Swoboda, 1984) to induce client change. A number of empirical studies (e.g., Swoboda, Dowd, & Wise, 1990), meta-analyses (e.g., Shoham-Salomon & Rosenthal, 1987), and literature reviews (e.g., DeBord, 1989) indicate the inconsistent influence of paradoxical interventions on client outcomes.

**Reactance as a tailoring variable.** A third approach combined the above two ideas to suggest that because reactance proneness moderates therapeutic success, considering clients' level of trait reactance allows therapists to tailor intervention strategies (e.g., Beutler, 1979). Specifically, Dowd and Seibel (1990) suggested that for clients low in trait reactance, therapy should aim to increase autonomy and decision-making capabilities. Conversely, for clients who exhibit high trait reactance, therapists should focus on presenting themselves as accepting facilitators, even using humor to note clients' tendency toward reactance. For instance, Karno and colleagues (2010) reported that the extent of structure (e.g., instructions) that therapists offered interacted with trait reactance to predict treatment success for alcoholism. When patients were high in reactance proneness, less structured therapists prompted greater use of pro-recovery language; for patients low in trait reactance, the converse was true (for similar results see Arnold & Vakhrusheva, 2016). This research shows that matching self-directed treatments with patients who exhibit reactance increases effectiveness (for review see Beutler et al., 2002).

### **Debate Over Trait Reactance**

Despite the development of literatures dedicated to examining the role of trait reactance in clinical settings, some scholars have questioned its use and construct validity (e.g., Miron & Brehm, 2006). Shoham and colleagues (2004) initiated this pushback, stating that the literature is unclear on whether researchers can usefully conceptualize reactance as a trait because, "(a) Reactance may not be a stable trait, and (b) what is currently measured as a trait may not reflect

the construct of reactance” (p. 182). These authors argued clinicians could still benefit from applying principles of reactance—but it should be as a motivational state. In a similar vein, Silvia (2006) suggested that any evidence for the validity of trait reactance was indirect, as researchers had not assessed its relation to state reactance. In testing this idea, Silvia found that a pushy, high threat message was most persuasive to people who scored high, not low, on the Hong Psychological Reactance Scale (HPRS; Hong & Page, 1989). People who should have disliked the reactance-inducing message the most (i.e., those high in trait reactance) instead disliked it the least. Similarly, as we discuss in Wave 4, studies indicate some issues with validity of common trait reactance measures (e.g., Buboltz, Thomas, & Donnell, 2002). As an additional criticism, Miron and Brehm (2006) noted that because items on trait scales appear to measure affect, and their explanatory power is low, “there is little to gain from the conceptualization of reactance as a personality trait” (p. 7).

### **Future Directions for PRT in Clinical Psychology**

Research applying PRT to clinical settings has clearly been fruitful, as the various perspectives in Wave 2 attest (for review see Beutler, Harwood, Michelson, Song, & Holman, 2011). However, to allow the field to reach its full potential, scholars must resolve two interrelated issues. For one, research should address the psychometric instability of the prominent trait reactance measures, which we discuss in Wave 4 (e.g., Thomas, Donnell, & Buboltz, 2001). Once a valid measure of trait reactance is derived, researchers can determine the utility of the construct. One possibility is that trait reactance is indeed a useful construct, but that measurement challenges have hindered scholars from elucidating its true utility. Another possibility is that researchers should move their focus away from trait reactance, and toward traits that lead people to be more likely to become reactant. For example, Type A personalities

react differently to freedom threats than Type Bs (e.g., Rhodewalt & Marcroft, 1988); sensation seeking also moderates reactance arousal (Quick & Stephenson, 2008). Clinical researchers should consider these other traits in addition to trait reactance, particularly until they resolve the measurement issue. This combination—determining ways to validly measure trait reactance and focusing on other personality traits associated with it—could stabilize findings and open the field up for continued clinical research.

An additional possibility for future research in this domain comes from communication research: as we detail in Wave 3, studies have revealed the types of messages that arouse (e.g., controlling) and diminish (e.g., autonomy-supportive) reactance. Building on these findings, clinical psychologists could consider the influence of their communication style on patient reactance. For instance, as Beutler and colleagues (2002) noted in their review, nondirective interventions that focus on relationship-building (vs. direct behavioral recommendations) are more effective for clients high in trait reactance. Research and theorizing using a motivational perspective (Wave 5) also has implications for clinical scholarship. Even though scholars have considered the role of trait characteristics in therapeutic resistance, clients' current state of mind likely also interacts with therapist intervention style to predict treatment outcomes. As an example, Lienemann and Siegel (2016) showed that people with heightened depressive symptomatology were reactant to all communications, not just controlling ones.

### **Wave 3: Contributions from Communication Research**

Concurrent to Wave 2, scholars began to utilize the explanatory power of PRT in other domains, most notably communication research (for review see Quick et al., 2013). A seminal paper in this line of work came from Bensley and Wu (1991), who experimentally examined college students' reactions to high- and low-threat antidrinking messages. This scholarship led

communication scholars to undertake fruitful programs of research on the message features that increase (e.g., controlling language, Buller, Borland, & Burgoon, 1998) and decrease (e.g., narrative, Moyer-Guse, 2008) arousal of reactance.

### **Controlling and Autonomy-Supportive Language**

In line with Brehm's (1966) original suggestion that threatening communication will arouse reactance, communication scholars have examined the effects of controlling message features on reactance processes (e.g., Quick & Kim, 2009). These studies typically contrast two types of messages: *controlling* (e.g., "must," "ought," "should," Miller et al., 2007, p. 223) and *autonomy-supportive* (e.g., "perhaps," "possibly," "maybe," Miller et al., 2007, p. 223). As noted, in one of the first studies to manipulate message directness, Bensley and Wu (1991) tested the effectiveness of high- and low-threat messages in reducing college students' alcohol consumption. The authors found that high-threat messages aroused more reactance than low-threat messages across two experiments: participants exposed to the high-threat messages drank more than those who saw the low-threat messages (i.e., a boomerang effect, Brehm, 1966).

This paradigm, where scholars test the effectiveness of high- and low-threat communications, is the standard for testing PRT in communication research (for review see Burgoon, Alvaro, Grandpre, & Voloudakis, 2002). Using this approach, scholars have replicated this pattern of results many times, showing that controlling communications arouse reactance in a variety of contexts, such as health (e.g., Crano, Alvaro, Tan, & Siegel, 2017) and consumer behavior (e.g., Zemack-Rugar, Moore, & Fitzsimons, 2017).

### **Other Message Features Affecting Reactance Arousal**

Once researchers established that strongly worded messages would consistently arouse reactance, they turned to features that could *reduce* reactance (for review see Quick et al., 2013).

**Restoration postscripts.** One strategy for allaying the reactance that people experience from persuasive messages is to include a reminder of their freedom to choose at the end of the communication (i.e., a postscript; Brehm & Brehm, 1981). For instance, Bessarabova and colleagues (2013) randomly assigned participants to receive a postscript (i.e., “The choice is yours. You’re free to decide for yourself,” p. 347) or no postscript. As predicted, the restoration postscript mitigated reactance for participants who read the high-threat message but not the low-threat message (for similar results see Kirchler, 1999). These data indicate that message designers can reap the benefits of direct messages (e.g., clarity, Miller et al., 2007) while avoiding the pitfalls of reactance (e.g., source derogation, Rains, 2013).

**Message novelty.** The degree to which people perceive a message is novel has been equated with decreased reactance arousal and increased message effectiveness (e.g., Kang et al., 2006). Palmgreen and colleagues (1991) first proffered the construct of message sensation value to draw the attention of targets to a persuasive communication, defining it as “the degree to which formal and content audio-visual features of a message elicit sensory, affective, and arousal responses” (p. 219). According to Morgan and colleagues (2003), this construct is useful because communications that are high in sensation value draw attention away from controlling aspects of a message. In a study supporting this theorizing, Quick (2013) showed that when adolescents perceived messages as highly novel, they reported decreased perceptions of freedom threat.

**Narrative.** Similar to message novelty, research has also shown that using narratives in persuasive messaging can reduce reactance effects and increase persuasive effectiveness (Quick et al., 2013). In one study, Moyer-Guse and Nabi (2010) examined how features of a story (e.g., narrative transportation, Green & Brock, 2000) could mitigate resistance to persuasion. Communications that included narrative presented issues of teen pregnancy in the context of a

popular dramatic television show, while control messages appeared as a news broadcast.

Narrative increased participants' identification with story characters and decreased perceptions of persuasive intent; as a result, reactance decreased and safe sex intentions increased.

**Empathy.** Another reactance reduction strategy involves inhibiting people's anger and counterargumentation by using message content to arouse empathy in the audience (e.g., Shen, 2010, 2011). The idea is that if people feel empathy toward characters in a message, they may come to identify with the characters; in turn, they perceive a message the characters deliver as less threatening than if they did not identify with the characters. In one study, Shen (2010) used a quasi-experimental design that included five antismoking or antidrinking messages that participants rated on the amount of empathy they induced. Results indicated that state empathy reduced reactance, and in turn, indirectly affected persuasive effectiveness of the advertisement.

**Inoculation and reactance.** Recent research has examined two distinct ways in which inoculating (i.e., forewarning, McGuire, 1961) people to the possibility of a forthcoming threat can increase or decrease reactance arousal (e.g., Richards, Banas, & Magid, 2017). In one approach, Miller and colleagues (2013) randomly assigned participants to view an inoculation message intended to arouse reactance, a traditional inoculation message, or a no-inoculation control prior to exposing them to a persuasive message addressing one of four issues (e.g., legalization of marijuana). Forewarning participants with a reactance-inducing message enhanced their subsequent reactance to a controlling message, enabling them to resist persuasive influence over two weeks later. In a complementary investigation, Richards and Banas (2015) theorized that exposing participants to a pre-message warning that they might experience reactance (i.e., inoculating them) would decrease reactance to an ensuing target message, resulting in increased persuasion. These authors presented participants either with an inoculation

message or no message; they then saw a brochure detailing the ills of college binge drinking. As predicted, the inoculation pre-message decreased perceived threat and reactance to the brochure, and indirectly affected participants' intentions to binge drink (also see Richards et al., 2017).

**Reactance as persuasive strategy.** Rather than reducing reactance, theorizing and research indicates that campaigners can use its arousal as an advantageous persuasive strategy (e.g., Turner, 2007). For instance, the recent “truth” anti-tobacco campaign in Florida presented cigarettes as an overweight, dirty bully who tries to control adolescents' behavior (Zucker et al., 2000). This approach turns the tables, as reactance against the message in this case would include *not* smoking, a clearly desirable outcome. Indeed, evaluations of this campaign have been favorable (e.g., Sly, Hopkins, Trapido, & Ray, 2001), illustrating the utility of this approach (for a similar discussion see Farrelly et al., 2002). Other evidence supports the idea that reactance arousal can be favorable, as Quick and colleagues (2009) posited that because secondhand smoke threatens people's freedom to breathe clean air, their anger could prompt a desirable behavior (e.g., activism against smoking). Results indicated that anger with secondhand smoke was positively associated with reactance and, in turn, with attitudes toward clean indoor air policies.

### **Future Directions for PRT in Communication Research**

Communication research has been a driving force in PRT research for 35 years (for review see Quick et al., 2013). These scholars are well-positioned to continue pushing the theory forward, including answering fundamental questions about PRT that remain open. For instance, scholars can use the controlling message experimental paradigm (for review see Burgoon et al., 2002) to examine Brehm's (1966) rarely assessed proposition that the greater the proportion and number of freedoms threatened, the more reactance arousal. In addition, a great deal of communication research has to do with interpersonal communication—a potential aspect of



reactance arousal that has received limited attention (e.g., Sinclair, Felmlee, Sprecher, & Wright, 2015). For instance, scholars could examine the interpersonal nonverbal cues (for review see Burgoon, Guerrero, & Floyd, 2010) that are associated with reactance arousal. Further, communication scholars can bring new approaches to the counseling domain, such as revealing reactance amelioration strategies that clinical research has rarely considered (e.g., use of narratives, Green & Brock, 2000). Just as communication can bring new perspectives to the clinical research, considering the state-level motivational variables described in Wave 5 (e.g., uncertainty, Rosenberg & Siegel, 2017a) could lead to new insights in message development.

#### **Wave 4: Measuring Reactance**

As communication research based on PRT expanded, many of these same scholars (e.g., Dillard & Shen, 2005) began to address one of the principal criticisms of PRT—that *state* psychological reactance is immeasurable (Brehm, 1966; Brehm & Brehm, 1981). In line with Brehm’s assertion, early research on PRT did not measure reactance directly, instead assessing the outcomes associated with reactance arousal, such as boomerang effects (e.g., Worchel & Brehm, 1970) and increased attractiveness of the eliminated freedom (e.g., Brehm & Rozen, 1971). Even though clinicians began measuring *trait* reactance over 30 years ago (e.g., Merz, 1983), with both self-report (e.g., Hong & Page, 1989) and observational (e.g., Shoham-Salomon et al., 1989) techniques, few studies attempted to measure *state* reactance directly (e.g., Lindsey, 2005). However, in the past 15 years, there has been a renewed focus across several domains to propose self-report scales (e.g., Dillard & Shen, 2005) and a physiological measure (Sittenthaler, Steindl, & Jonas, 2015) to directly assess state reactance arousal.

#### **Measuring Trait Reactance**

**Self-report measures.** Scholars' reimagining of reactance as a trait led to three prominent measures (Shen & Dillard, 2007): The Questionnaire for Measuring Psychological Reactance (QMPR; Merz, 1983), the Therapeutic Reactance Scale (TRS; Dowd, Milne, & Wise, 1991), and the HPRS (Hong & Page, 1989).

***Questionnaire for Measuring Psychological Reactance.*** The initial measure of trait reactance, the QMPR, came from Merz (1983). Noting that there were limited experimental assessments of PRT in the literature, Merz developed 32 initial items based on constructs like resistance and defiance; he then submitted these items to expert raters for evaluation. The resulting 18-item QMPR included statements such as, "Regulations and duties trigger a sense of resistance in me" and "I react strongly when someone tries to restrict my personal freedom of choice." There are limited data on the validity of the QMPR, but a review by Shen and Dillard (2007) suggested the scale has some face and content validity. Subsequent evaluations of the factor structure of the QMPR (e.g., Hong & Ostini, 1989; Tucker & Byers, 1987) indicated that in its original form, the QMPR lacked adequate psychometric properties to warrant continued use. Some of the difficulty in validating the QMPR could have had to do with translation, as the original Merz (1983) version was in German (Tucker & Byers, 1987).

***Therapeutic Reactance Scale.*** Due to the limitations of the Merz (1983) scale, Dowd and colleagues (1991) created the 28-item TRS to assess trait reactance. With the goal of creating a user-friendly self-report scale, these authors based an initial pool of 112 items on Brehm's (1966) description of reactance. Using item and factor analysis on data from 163 participants, the TRS was reduced to its final 28-item form (e.g., "I resent authority figures who tell me what to do"). Data from Dowd and colleagues (1991) and subsequent follow-up studies supported the convergent and divergent validity of the TRS, as it was correlated with measures of locus of

control and the K scale of the Minnesota Multiphasic Personality Inventory; it was not correlated with measures of counselor social influence or anxiety. However, following a series of factor analyses showing that the TRS is unidimensional, Buboltz and colleagues (2002) argued that because the construct of reactance is multidimensional, “continued use in its current form should be undertaken with caution” (Buboltz et al., 2002, p. 124).

***Hong Psychological Reactance Scale.*** Similar to the TRS, the motivation of Hong and Page (1989) in creating the HPRS had to do with the psychometric deficits of the Merz (1983) scale. Over several iterations, Hong and colleagues (e.g., Hong, 1992; Hong & Faedda, 1996) developed an 11-item scale comprised of four factors: emotional response to restricted choice, reactance to compliance, resisting influence from others, and reactance to advice and recommendations. Sample items from the HPRS include, “I become frustrated when I am unable to make free and independent decisions” and “Regulations trigger a sense of resistance in me.” Studies attest to the validity of the HPRS as an indicator of trait reactance, including positive correlations with measures of trait anger and depression and no relationship with a measure of self-esteem (Hong & Faedda, 1996). Despite this support, a confirmatory factor analysis by Thomas and colleagues (2001) revealed similar flaws to the TRS, stating that “without a major revision of the HPRS, practitioners would be well advised to discontinue its use” (p. 11).

**Observational measure.** An additional non-self-report measure came from Shoham-Solomon and colleagues (1989), who used patients’ tone of voice as an indicator of trait reactance. Specifically, these authors filtered out the content of patients’ responses to questions about the controllability of their procrastination problems; four raters then coded the responses on a series of scales from *spiteful-nonspiteful*, *uninhibited-inhibited*, and *active-passive*. The result was a composite score, on which patients whose tone was spiteful, uninhibited, and active

were considered highly reactant. The voice measure was correlated with several self-report questions, indicating its initial construct validity. However, Shoham and colleagues (1996) adapted this measure for a study of reactance among insomniacs, finding mixed evidence for its validity. Although limited research has continued to use this measure (e.g., Levesque, Velicer, Castle, & Greene, 2008), it helped set the stage for later direct assessment of reactance using techniques other than self-report (e.g., physiological measures, Sittenthaler et al., 2015).

### **Measuring State Reactance**

**Self-report measures.** There are three primarily used, validated self-report measures of reactance in the literature: the widely-used intertwined model (Dillard & Shen, 2005) as well as two more recent scales, the Salzburg State Reactance Scale (SSR Scale; Sittenthaler et al., 2015) and the Reactance to Health Warnings Scale (RHWS; Hall et al., 2016). Even though other self-report measures of trait reactance exist in the literature (e.g., Norman & Wrona-Clarke, 2015), they have generally been one-off assessments that were not subsequently validated. For instance, Lindsey (2005) created a four-item measure based on the HPRS (Hong & Faedda, 1996), but despite its potential utility, it was not developed further (Quick et al., 2013).

***The intertwined model.*** The first in-depth attempt to measure state reactance using a self-report scale came from Dillard and Shen (2005), who suggested that the immeasurable nature of reactance was limiting scholars' ability to fully study PRT. Using prior literature as a guide, the authors outlined four possibilities for directly measuring reactance: a) purely cognitive (e.g., Kelly & Nauta, 1997); b) purely negative emotion/affect (e.g., Dillard & Meijnders, 2002); c) a combination of negative affect and cognition, with each as a separate component (e.g., Dillard & Peck, 2000); or d) a combination of negative affect and cognition, with the components intertwined. Dillard and Shen (2005) conducted two studies to empirically determine which of

the four models fit the data best. In each study, participants read one of two versions of a persuasive message, varied on strength of threat; the authors then measured their cognitive responses using a thought-listing procedure and their negative affect with a 4-item anger scale. The results of both studies supported the intertwined model (i.e., an entangled combination of negative affect and cognition): a combination of anger and negative cognition fully mediated the effect of threat on attitude and behavioral intention. A comparison of measures (Quick, 2012) and a meta-analysis (Rains, 2013) provided additional support for the intertwined model.

*Salzburg State Reactance Scale.* Despite consistent support and continued use (e.g., Kim, Levine, & Allen, 2013), Sittenthaler and colleagues (2015) suggested that Dillard and Shen's (2005) measure has a few limitations—namely, that researchers have rarely tested it outside of persuasion and messaging studies or with nonstudent samples. As such, these authors sought to determine whether the intertwined measure would accurately assess reactance arousal in, “all domains where a freedom threat is present” (p. 258). Based on these constraints, Sittenthaler and colleagues (2015) proposed the SSR Scale; guided by earlier research (e.g., Jonas et al., 2009), it uses 10 items to measure emotional experience, negative attitudes, and aggressive behavioral intentions in response to a threatening situation.

Across three studies, Sittenthaler and colleagues (2015) presented participants with one of three imagined scenarios meant to arouse reactance: a) A student attempting to rent an apartment; b) An employee having an oft-used coffeemaker removed; or c) A bouncer not allowing the participant into a desirable club. The data indicated that 10 items best fit the three-factor solution assessing people's experience of reactance, negative attitudes, and aggressive behavioral intentions (e.g., “Would you like to ruin his reputation by publishing a negative review on a relevant Internet site?”). Results indicated that the SRS Scale has a high degree of

internal consistency and correlated well with other measures of state reactance (e.g., Lindsey, 2005). The SSR Scale's relationship with a measure of anger (Dillard & Shen, 2005), which is a core component of reactance, provided additional evidence of its validity.

***Reactance to Health Warnings Scale.*** A final self-report measure, the Reactance to Health Warnings Scale (RHWS), comes from Hall and colleagues (2016, 2017), who sought to build on Dillard and Shen's (2005) intertwined model with a measure of reactance specific to people's reactions to health messages. To this end, Hall and colleagues derived three dimensions of reactance to health warnings (i.e., anger, perceived threat, and counterarguing the warning) from the literature, and from which they developed 87 initial items. Factor analyses revealed a nine-factor solution, each with three items: anger, self-relevance, common knowledge, exaggeration, government, manipulation, personal attack, derogation, and discounting. Despite correlational and experimental support, Hall and colleagues (2017) worried the length of the 27-item RHWS was impractical for researchers. As a result, these scholars used item-response theory to create the Brief RHWS (BRHWS), a three-item measure of people's reactions to health warnings (e.g., "This warning is trying to manipulate me"). Results from two studies indicated good internal consistency and test-retest reliability as well as convergent and predictive validity.

**Physiological measurement of reactance.** Although Brehm (1966) noted that physiological arousal accompanied psychological reactance, few researchers have measured the motivational state in this way (e.g., Baum, Fleming, & Reddy, 1986). However, guided by Wright's (2008) suggestion that cardiovascular activity varies with effort to achieve a goal, Sittenthaler and colleagues (2015) recently tested a physiological measure of reactance arousal. Using this same reasoning, these authors suggested that variations in cardiovascular activity could capture the motivational intensity (Brehm & Self, 1989) associated with people's

responses to freedom threats. To indirectly test this idea, these authors examined differences in physiological arousal between people who were subject to illegitimate or legitimate freedom restrictions. Results indicated that when faced with an illegitimate freedom threat, people experienced an immediate increase in heart rate; conversely, legitimate restrictions resulted in a delayed jump in heart rate. Simply, reactance responses are characterized by both an immediate, physiological component as well as a slower, more cognitive component.

### **Future Directions for Measurement of Reactance**

With these three self-report scales (i.e., intertwined model, SSR Scale, RHWS) and a physiological measure (Sittenthaler et al., 2015), scholars have made considerable progress in directly measuring reactance. Despite encouraging evidence for the SSR Scale and RHWS/BRHWS, we have concerns about the construct validity of each. In particular, items in both scales seem to assess antecedents (e.g., threat to freedom) of reactance, instead of reactance itself. Owing to these trepidations, and due to consistent support for the intertwined measure (e.g., Quick, 2012), we agree with Rains' (2013) assessment: researchers should continue measuring reactance as a combination of anger and negative cognitions. Nevertheless, scholars should continue to refine all three self-report measures—for instance, showing that reactance and other negative motivational states are distinct (for a discussion see Brehm, 1966). Frustration or another negative motivational state could result in anger and negative cognitions (Lewin, 1959), so as a complement to assessments of construct validity (e.g., Quick, 2012), scholars should evaluate the intertwined model's discriminant validity. Scholars should also continue to develop physiological measures of reactance arousal (Sittenthaler et al., 2015), with a potential path forward is to further assess the dual-process approach that these authors proposed.

### **Wave 5: Return to Motivation**

From its inception, Brehm (1966) was clear that reactance is a motivational construct: "...reactance is defined *not* simply as an unpleasant tension...but rather a motivational state with a specific direction, namely, the recovery of freedom." (p. 11, italics original). Despite these descriptions, the centrality of motivation to PRT remained relatively dormant until Miron and Brehm (2006) placed it alongside other theories with distinct motivational bents (e.g., energization model of motivation, Brehm & Self, 1989). This suggestion prompted a range of similar perspectives, as Steindl and colleagues (2015) devoted a section of their review to *Reactance as Motivation*, and Leander and colleagues (2016) discussed PRT in the context of self-determination theory (Deci & Ryan, 2000), among other motivational frameworks.

With the centrality of motivation to PRT in mind, we offer three ways in which scholars can maximize PRT's potential to flourish: a) factors that affect the desirability of freedom restoration (e.g., uncertainty, Hogg, 2007) and people's perceptions of freedom threats (e.g., depressive symptomatology, Lieneman & Siegel, 2016), b) catalysts of reactance beyond freedom threats (e.g., self-discrepancy, Higgins, 1987), and c) outcomes of reactance beyond anger, negative cognitions, and boomerang effects (e.g., goal shielding, the cognitive inhibition of non-focal goals; Shah, Friedman, & Kruglanski, 2002). Given the forward-looking nature woven through Wave 5, we omit a formal Future Directions in this section.

### **Factors Affecting Perceptions of Freedom Threats and Freedom Restoration**

Although scholars have long discussed individual difference variables as influencing reactance processes (for review see Brehm & Brehm, 1981), they have only recently begun to examine states of mind that impact people's reactions to freedom threats (e.g., empathy, Shen, 2010). In line, a first direction for continued research is to expand this examination of the moderating role of different states of mind on reactance processes. In one set of studies,



Rosenberg and Siegel (2017a) examined the influence of uncertainty on the extent to which people want to restore their freedom once they perceive it is under siege. These authors primed participants to feel uncertain and vulnerable or certain and safe, and assessed their reactions to two different freedom threats: a controlling (vs. supportive) doctor (e.g., Burgoon et al., 1990) and a controlling (vs. supportive) health message (i.e., encouraging daily flossing, Dillard & Shen, 2005). When participants were primed to feel certain, their intentions to act counter to the message were significantly greater when they read the controlling (vs. supportive) message; when primed to feel uncertain, intentions to act counter to the message were the same, regardless of which message they read. That is, uncertainty affected the extent to which, once freedom was threatened, people sought freedom restoration.

An additional consideration is whether people's state of mind affects their perceptions of freedom threats in the first place. One possible theoretical approach is to consider whether people are experiencing a narrowing (e.g., Lewin, 1959) or broadening (e.g., Frederickson, 2004) of the mental field. Negative states typically constrict people's cognitive and behavioral options (Gable, Poole, & Harmon-Jones, 2015; Lewin, 1959), whereas positive states have the opposite effect, widening their cognitive and behavioral options (Frederickson, 2004). It could be that when people are in a broadened state of mind when they perceive a freedom threat, their reactions will be diminished, including a decreased desire for freedom restoration. Conversely, when people are in a narrowed state when they perceive a freedom threat, it will augment their reactions, including a heightened desire for freedom restoration.

In support of the idea that broadening mental states reduce reactance arousal, Schuz and colleagues (2013) showed that having participants self-affirm (Steele, 1988) before receiving a high-threat skin cancer communication, which should have aroused reactance and a consequent

increase in sun exposure, instead decreased sun exposure. A broadening of the mental field could explain people's diminished reactions to freedom threats after self-affirming (Schuz et al., 2013)—the affirmation served to widen their latitude of what constitutes a freedom threat. On the other hand, mental constriction could explain people's amplified reactions to autonomy-supportive threats when experiencing heightened depressive symptomatology (Lienemann & Siegel, 2016)—negative biases present in depression narrowed their latitude of what constitutes a freedom threat. Providing evidence that a narrowed mental field could maximize the likelihood of reactance, these authors reported that even though an autonomy supportive health message caused less reactance among people with low levels of depressive symptomatology than a direct one, those with high levels of depressive symptomatology were equally reactant to both messages.

If being in a narrowed state maximizes the likelihood of reactance, then another state that would likely lead to increased reactance is being in a state of reactance itself. Indeed, Brehm and Brehm (1981) suggested that an initial threat to people's freedom could sensitize them to the potential for additional, later threats. Research has rarely assessed this PRT proposition, but its logic aligns with Coyne's (1976) depressive spiral, which is a self-fulfilling prophecy that adolescents with depression often face: Constant reassurance-seeking and other negative behaviors cause their peers to withdraw from them, resulting in a lost social network, and reinforcing their prior beliefs that peers are uncaring, causing their depression to worsen (e.g., Joiner & Metalsky 2001). Likewise, being in a state of reactance could lead increased sensitivity to freedom threats, which could lead to the perception of freedom threats; in turn, people could feel threatened, leading to even more sensitization to further threats—a process Siegel and Rosenberg (2017b) dubbed the *reactive spiral*. Guided by the general hypothesis that people's state of mind when they perceive a freedom threat will influence reactance arousal and

diminishment, scholars can examine a range of narrowing (e.g., anger, Gable et al., 2015) and broadening (e.g., elevation, Thomson & Siegel, 2017) states on perception of freedom threats.

### **Expanding Catalysts of Reactance**

A second area for continued PRT research is to consider the experiences other than direct threat or elimination of freedom that arouse psychological reactance. Simply, people may have experiences other than threats to valued behaviors that lead to reactance and a consequent desire to regain freedom. In outlining this possibility, Miron and Brehm (2006) indicated that group categorization could threaten people's freedom to identify or behave as they please. Indeed, even positive categorizations (e.g., "mother," p. 9) can induce reactance people feel a stereotype limits their behavioral freedom in a way that is important to them. This suggestion aligns with early research by Wicklund (1974), which indicated discrimination would cause reactance. More recent evidence in support of this idea comes from Kray and colleagues (2001), who suggested that threats to people's freedom to identify with the group of their choosing can lead to the experience of reactance. These authors reported that explicitly activating gender stereotypes in a negotiation context caused men and women to behave counter to these expectations.

Although this research shows that people can experience reactance from explicit discrimination and stereotyping, a corollary is to examine the implicit, subtler freedom threats that arouse reactance. Early studies showed that making a decision (e.g., Sullivan & Pallak, 1976) or publically committing to a position (e.g., Andreoli et al., 1974) could arouse reactance. However, in recent years, researchers have moved away from these studies—the primary paradigm for testing PRT now uses explicit verbal or written threats (e.g., Dillard & Shen, 2005). Taking a step back, it could be fruitful for the field to reconsider these implicit threats, particularly the litany of social phenomena that PRT could help explain. For instance,

Graupmann and colleagues (2012) indicated that group categorization (i.e., ingroup vs. outgroup) affects reactance arousal. More broadly, these findings indicate that talking about other social groups may cause some people to feel threatened—an implication that could be important for diversity and inclusion training programs. It is possible that the mere presence of an outgroup member (e.g., police) may make people feel immediately threatened, and could explain the consequent source derogation that often occurs. Scholars can examine these ideas to determine the specific circumstances in which intergroup contact exacerbates or ameliorates reactance.

### **Expanding Outcomes of Reactance**

An additional avenue for future research is to consider the broad, pervasive effects that reactance arousal is likely to have on people's behaviors and cognitions. Given that reactance is a negative motivational state, the effects of which are often pervasive (e.g., Proulx, 2012), people's reactions to freedom threats are likely not limited to certain behavioral or cognitive outcomes. Instead, the motivational arousal of reactance likely catalyzes a host of goal-directed cognitions and behaviors (for discussions see Hart, 2014; Proulx, 2012). In support, recent work, derived from the theorizing of Lewin (1959) and Tolman (1932), outlined a suite of outcomes associated with negative motivational states (i.e., changes in ability, disposition, allocation of resources, processing and perception, and tactic; Rosenberg & Siegel, 2016). For example, when experiencing a negative motivational state, people might exhibit reduced creativity, increased social dominance, and myopic thinking; they may become hyperfocused on relevant stimuli and take the most direct route toward restoring freedom (Siegel, 2013).

Aligned with this logic, it serves to reason that as a negative motivational state, reactance likely results in a range of goal-directed outcomes. In a recent review, Steindl and colleagues (2015) presented parallel reasoning: "Similar to the investigation of guilt, it would also be

interesting for future research to take a closer look at the relation between reactance and other negative (and positive) emotions, like fear (or humor)” (p. 211). In support, these authors referred to unpublished evidence (cited as Steindl, Jonas, Klackl, & Sittenthaler, 2015) showing that reactance arousal is associated with an array of *positive* feelings (e.g., strong, determined) in addition to the negative outcomes that researchers commonly assess. Other assessments of this proposition are also encouraging, as Rosenberg and Siegel (2017b) showed that freedom threats increased outcomes not typically assessed in relation to PRT, such as social dominance orientation (SDO; Pratto, Sidanius, Stallworth, & Malle, 1994). In another study, Steindl and Jonas (2015) reported that interpersonal freedom threats aroused reactance, and also biased people’s subsequent cognitions and evaluations of their interaction partner. Using this approach, researchers could examine a number of simultaneous, compensatory outcomes after threatening people’s freedom. For example, anger, which a core feature of reactance, is positively associated with a host of negative and positive outcomes: riskier decision making (e.g., Baumann & DeSteno, 2012), increased willingness to punish a wrongdoer (e.g., Ask & Pina, 2011), and optimistic appraisals of stressors (e.g., Dunn & Schweitzer, 2005).

### **Conclusion**

In recognition of the recent 50<sup>th</sup> anniversary of Brehm’s (1966) proposal of PRT’s, and the special issue that *Zeitschrift für Psychologie* (2015) devoted to it, the current analysis provides an overarching framework for past PRT research and focuses on fruitful areas for continued scholarship. Complementing recent, discipline-specific comprehensive reviews (e.g., Quick et al., 2013), we integrated PRT research across fields in which it has flourished, outlining five overlapping waves in the PRT literature: Wave 1: Theory proposal and testing, Wave 2:

Contributions from clinical psychology, Wave 3: Contributions from communication research, Wave 4: Measurement of reactance, and Wave 5: Return to motivation.

A key feature of this amalgamation of the literature is a description of interdisciplinary future directions for each of these fields. Clinical psychology must first determine whether trait reactance is a fruitful construct to continue investigating. In addition, these scholars can focus on other personality variables that relate to reactance proneness e.g., Type A, Rhodewalt & Marcroft, 1988) and take advantage of measurement advances from communication research. Communication scholars should continue pushing PRT forward, including answering fundamental questions that remain open (e.g., the relationship between proportion of freedoms threatened and reactance arousal). Scholars working on direct measurement of reactance can continue developing the intertwined measure (Dillard & Shen, 2005), as well as refining physiological measures of reactance arousal (Sittenthaler et al., 2015). Motivation science can focus on the factors that affect people's perceptions of freedom threats (e.g., depressive symptomatology, Lieneman & Siegel, 2016) and the desirability of freedom restoration (e.g., uncertainty, Hogg, 2007). Moreover, these scholars can assess the range of catalysts (e.g., discrimination, Wicklund, 1974) and outcomes (e.g., SDO, Rosenberg & Siegel, 2017b) rarely assessed in the context of PRT. A main implication of returning to PRT's motivational roots is vastly increasing its explanatory power to continue addressing a range of socially relevant phenomena. More broadly, revisiting motivation should again inform research in clinical psychology, communication, and measurement—just as Brehm and Brehm's (1981) synthesis prompted the initial scholarship in these areas.

## References

- Andreoli, V. A., Worchel, S., & Folger, R. (1974). Implied threat to behavioral freedom. *Journal of Personality and Social Psychology, 30*, 765-771.  
<http://dx.doi.org/doi:10.1037/h0037529>
- Arnold, K. A., & Vakhrusheva, J. (2016). Resist the negation reflex: Minimizing reactance in psychotherapy of delusions. *Psychosis, 8*, 166-175.  
<http://dx.doi.org.ccl.idm.oclc.org/10.1080/17522439.2015.1095229>
- Ask, K., & Pina, A. (2011). On being angry and punitive: How anger alters perception of criminal intent. *Social Psychological and Personality Science, 2*, 494-499.  
[doi:10.1080/17522439.2015.1095229](http://dx.doi.org/10.1080/17522439.2015.1095229)
- Baum, A., & Gatchel, R. J. (1981). Cognitive determinants of reaction to uncontrollable events: Development of reactance and learned helplessness. *Journal of Personality and Social Psychology, 40*, 1078-1089. [doi:10.1037/0022-3514.40.6.1078](http://dx.doi.org/10.1037/0022-3514.40.6.1078).  
<http://dx.doi.org/10.1037/0022-3514.40.6.1078>
- Baum, A., Fleming, R., & Reddy, D. M. (1986). Unemployment stress: Loss of control, reactance and learned helplessness. *Social Science & Medicine, 22*, 509-516.  
[http://dx.doi.org/10.1016/0277-9536\(86\)90016-X](http://dx.doi.org/10.1016/0277-9536(86)90016-X)
- Baumann, J., & DeSteno, D. (2012). Context explains divergent effects of anger on risk taking. *Emotion, 12*, 1196-1199. <http://dx.doi.org/10.1037/a0029788>
- Benoit, W. L. (1998). Forewarning and persuasion. In M. Allen & R. W. Preiss (Eds.), *Persuasion: Advances through meta-analysis* (pp. 139-154). Cresskill, NJ: Hampton Press.
- Bensley, L. S., & Wu, R. (1991). The role of psychological reactance in drinking following

- alcohol prevention messages. *Journal of Applied Social Psychology*, 21, 1111-1124.  
<http://dx.doi.org/10.1111/j.1559-1816.1991.tb00461.x>
- Bessarabova, E., Fink, E. L., & Turner, M. (2013). Reactance, restoration, and cognitive structure: Comparative statics. *Human Communication Research*, 39, 339-364.  
<http://dx.doi.org/10.1111/hcre.12007>
- Beutler, L. E. (1979). Toward specific psychological therapies for specific conditions. *Journal of Consulting and Clinical Psychology*, 47, 882-897. <http://dx.doi.org/10.1037/0022-006X.47.5.882>
- Beutler, L. E., Harwood, T. M., Michelson, A., Song, X., & Holman, J. (2011). Resistance/reactance level. *Journal of Clinical Psychology*, 67, 133-142.  
<http://dx.doi.org/10.1002/jclp.20753>
- Beutler, L. E., Moleiro, C., & Talebi, H. (2002). Resistance in psychotherapy: What conclusions are supported by research? *Journal of Clinical Psychology*, 58, 207-217. <http://dx.doi.org/10.1002/jclp.1144>
- Brehm, J. W. (1956). Postdecision changes in the desirability of alternatives. *The Journal of Abnormal and Social Psychology*, 52, 384-389. <http://dx.doi.org.ccl.idm.oclc.org/10.1037/h0041006>
- Brehm, J. W. (1966). *A theory of psychological reactance*. Oxford, England: Academic Press.
- Brehm, J. W., & Rozen, E. (1971). Attractiveness of old alternatives when a new attractive alternative is introduced. *Journal of Personality and Social Psychology*, 20, 261-266.  
<http://dx.doi.org/10.1037/h0031909>
- Brehm, J. W., & Self, E. A. (1989). The intensity of motivation. *Annual Review of Psychology*,



- 40, 109-131. <https://doi.org/10.1146/annurev.ps.40.020189.000545>
- Brehm, J. W., Stires, L. K., Sensenig, J., & Shaban, J. (1966). The attractiveness of an eliminated choice alternative. *Journal of Experimental Social Psychology*, 2, 301-313.  
[http://dx.doi.org.ccl.idm.oclc.org/10.1016/0022-1031\(66\)90086-2](http://dx.doi.org.ccl.idm.oclc.org/10.1016/0022-1031(66)90086-2)
- Brehm, S. S. (1976). *The application of social psychology to clinical practice*. Oxford, England: Hemisphere Publishing Corporation.
- Brehm, S. S., & Brehm, J. W. (1981). *Psychological reactance: A theory of freedom and control*. London, England: Academic Press.
- Buboltz, W. C., Thomas, A., & Donnell, A. J. (2002). Evaluating the factor structure and internal consistency reliability of the Therapeutic Reactance Scale. *Journal of Counseling & Development*, 80, 120-125. <http://dx.doi.org.ccl.idm.oclc.org/10.1002/j.1556-6678.2002.tb00174.x>
- Buller, D. B., Borland, R., & Burgoon, M. (1998). Impact of behavioral intention on effectiveness of message features: Evidence from the Family Sun Safety Project. *Human Communication Research*, 24, 433-453. <http://dx.doi.org/10.1111/j.1468-2958.1998.tb00424.x>
- Burgoon, J. K., Guerrero, L. K., & Floyd, K. (2010). *Nonverbal communication*. New York, NY: Taylor & Francis.
- Burgoon, M., Alvaro, E., Grandpre, J., & Voloudakis, M. (2002). Revisiting the theory of psychological reactance: Communicating threats to attitudinal freedom. In J. P. Dillard & M. Pfau (Eds.), *The persuasion handbook: Developments in theory and practice* (pp. 213-232). Thousand Oaks, CA: Sage.
- Burgoon, M., Parrott, R., Burgoon, J. K., Birk, T., Pfau, M., & Coker, R. (1990). Primary care

- physicians' selection of verbal compliance-gaining strategies. *Health Communication*, 2, 13-27. [http://dx.doi.org.ccl.idm.oclc.org/10.1207/s15327027hc0201\\_2](http://dx.doi.org.ccl.idm.oclc.org/10.1207/s15327027hc0201_2)
- Cautilli, J., Riley-Tillman, T. C., Axelrod, S., & Hine, P. (2005). Current behavioral models of client and consultee resistance: A critical review. *International Journal of Behavioral and Consultation Therapy*, 1, 147-164.
- <http://dx.doi.org.ccl.idm.oclc.org/10.1037/h0100742>
- Chadee, D. (2011). Toward freedom: Reactance theory revisited. In D. Chadee (Ed.), *Theories in social psychology* (pp. 13-43). Hoboken, New Jersey: Wiley-Blackwell.
- Coyne, J. C. (1976). Toward an interactional description of depression. *Psychiatry: Journal for the Study of Interpersonal Processes*, 39, 28-40.
- <http://dx.doi.org/10.1080/00332747.1976.11023874>
- Crano, W. D., Alvaro, E. A., Tan, C. N., Siegel, J. T. (2017). Social Mediation of persuasive media in adolescent substance prevention. *Psychology of Addictive Behaviors*, 31, 479-487. <http://dx.doi.org.ccl.idm.oclc.org/10.1037/adb0000265>
- De las Cuevas, C., Peñate, W., & Sanz, E. J. (2014). The relationship of psychological reactance, health locus of control and sense of self-efficacy with adherence to treatment in psychiatric outpatients with depression. *BMC Psychiatry*, 14.
- DeBord, J. B. (1989). Paradoxical interventions: A review of the recent literature. *Journal of Counseling & Development*, 67, 394-398. <http://dx.doi.org/10.1002/j.1556-6676.1989.tb02099.x>
- Deci, E. L., & Ryan, R. M. (2000). The 'what' and 'why' of goal pursuits: Human needs and the

self-determination of behavior. *Psychological Inquiry*, 11, 227-268.

[http://dx.doi.org/10.1207/S15327965PLI1104\\_01](http://dx.doi.org/10.1207/S15327965PLI1104_01)

Devine, D. A., & Fernald, P. S. (1973). Outcome effects of receiving a preferred, randomly assigned, or nonpreferred therapy. *Journal of Consulting and Clinical Psychology*, 41, 104-107. <http://dx.doi.org/10.1037/h0035617>

Dillard, J. P., & Meijnders, A. (2002). Persuasion and the structure of affect. In J.P. Dillard & M. Pfau (Eds.), *The persuasion handbook: Developments in theory and research* (pp. 309-327). Thousand Oaks, CA: Sage.

Dillard, J. P., & Peck, E. (2000). Affect and persuasion: Emotional responses to public service announcements. *Communication Research*, 27, 461-495.

<https://doi.org/10.1177/009365000027004003>

Dillard, J. P., & Shen, L. (2005). On the Nature of Reactance and its Role in Persuasive Health Communication. *Communication Monographs*, 72, 144-168.

<http://dx.doi.org/10.1080/03637750500111815>

Dowd, E. T. (2016). Resistance and the wounded self: Self-protection in service of the ego. *American Journal of Clinical Hypnosis*, 59, 100-113.

<http://dx.doi.org/10.1080/00029157.2016.1163656>

Dowd, E. T., Hughes, S. L., Brockbank, L., Halpain, D., Seibel, C., & Seibel, P. (1988). Compliance-based and defiance-based intervention strategies and psychological

reactance in the treatment of free and unfree behavior. *Journal of Counseling*

*Psychology*, 35, 370-376. <http://dx.doi.org.ccl.idm.oclc.org/10.1037/0022-0167.35.4.370>

Dowd, E. T., Milne, C. R., & Wise, S. L. (1991). The Therapeutic Reactance Scale: A measure

of psychological reactance. *Journal of Counseling & Development*, 69, 541-545.

<http://dx.doi.org/10.1002/j.1556-6676.1991.tb02638.x>

Dowd, E. T., & Seibel, C. A. (1990). A cognitive theory of resistance and reactance:

Implications for treatment. *Journal of Mental Health Counseling*, 12, 458-469.

Dowd, E. T., & Swoboda, J. S. (1984). Paradoxical interventions in behavior therapy. *Journal of Behavior Therapy and Experimental Psychiatry*, 15, 229-234.

[http://dx.doi.org/10.1016/0005-7916\(84\)90030-2](http://dx.doi.org/10.1016/0005-7916(84)90030-2)

Dunn, J. R., & Schweitzer, M. E. (2005). Feeling and Believing: The Influence of Emotion on Trust. *Journal of Personality and Social Psychology*, 88, 736-748.

<http://dx.doi.org.ccl.idm.oclc.org/10.1037/0022-3514.88.5.736>

Engs, R., & Hanson, D. J. (1989). Reactance theory: A test with collegiate drinking.

*Psychological Reports*, 64, 1083-1086. <https://doi.org/10.2466/pr0.1989.64.3c.1083>

Farrelly, M. C., Heaton, C. G., Davis, K. C., Messeri, P., Hersey, J. C., & Haviland, M. L.

(2002). Getting to the truth: Evaluating national tobacco countermarketing campaigns.

*American Journal of Public Health*, 92, 901-907.

Festinger, L. (1957). *A theory of cognitive dissonance*. Palo Alto, CA: Stanford University Press.

Folkman, S., Lazarus, R. S., Dunkel-Schetter, C., DeLongis, A., & Gruen, R. J. (2000). The dynamics of a stressful encounter. In E. T. Higgins, A. W. Kruglanski, E. T. Higgins, A. W. Kruglanski (Eds.), *Motivational science: Social and personality perspectives* (pp. 111-127). New York, NY: Psychology Press.

Frederickson, B. L. (2004). The broaden-and-build theory of positive emotions. *Philos Trans R Soc Lond B Biol Sci*, 359, 1367-1377.

Gable, P. A., Poole, B. D., & Harmon-Jones, E. (2015). Anger perceptually and conceptually

- narrows cognitive scope. *Journal of Personality and Social Psychology*, 109, 163-174.  
<http://dx.doi.org/10.1037/a0039226>
- Goldman, M., & Wallis, D. (1979). Restoring freedom when pressured not to select alternatives. *Psychological Reports*, 44, 563-566. <http://dx.doi.org/10.2466/pr0.1979.44.2.563>
- Gordon, R. M. (1976). Effects of volunteering and responsibility on the perceived value and effectiveness of a clinical treatment. *Journal of Consulting and Clinical Psychology*, 44, 799-801. <http://dx.doi.org.ccl.idm.oclc.org/10.1037/0022-006X.44.5.799>
- Grabitz-Gniech, G., Auslitz, K., & Grabitz, H. (1975). The strength of the reactance effect as a function of the absolute size and the relative reduction of freedom space. *Zeitschrift Für Sozialpsychologie*, 6, 122-128.
- Graupmann, V., Jonas, E., Meier, E., Hawelka, S., & Aichhorn, M. (2012). Reactance, the self, and its group: When threats to freedom come from the ingroup versus the outgroup. *European Journal of Social Psychology*, 42, 164-173.  
<http://dx.doi.org.ccl.idm.oclc.org/10.1002/ejsp.857>
- Green, M. C., & Brock, T. C. (2000). The role of transportation in the persuasiveness of public narratives. *Journal of Personality and Social Psychology*, 79, 701-721.  
<http://dx.doi.org/10.1037/0022-3514.79.5.701>
- Hall, M. G., Sheeran, P., Noar, S. M., Ribisl, K. M., Bach, L. E., & Brewer, N. T. (2016). Reactance to health warnings scale: Development and validation. *Annals of Behavioral Medicine*, 50, 736-750. <https://doi.org/10.1007/s12160-016-9799-3>
- Hall, M. G., Sheeran, P., Noar, S. M., Ribisl, K. M., Boynton, M. H., & Brewer, N. T. (2017). A

- brief measure of reactance to health warnings. *Journal of Behavioral Medicine*, 40, 520-529. <https://doi.org/10.1007/s10865-016-9821-z>
- Hart, J. (2014). Toward an integrative theory of psychological defense. *Perspectives on Psychological Science*, 9, 19-39. <https://doi.org/10.1177/1745691613506018>
- Heilman, M. E. (1976). Oppositional behavior as a function of influence attempt intensity and retaliation threat. *Journal of Personality and Social Psychology*, 33, 574-578. <http://dx.doi.org/10.1037/0022-3514.33.5.574>
- Heller, J. F., Pallak, M. S., & Picek, J. M. (1973). The interactive effects of intent and threat on boomerang attitude change. *Journal of Personality and Social Psychology*, 26, 273-279. <http://dx.doi.org/10.1037/h0034461>
- Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review*, 94, 319-340. <http://dx.doi.org/10.1037/0033-295X.94.3.319>
- Hogg, M. A. (2007). Uncertainty-identity theory. In M. P. Zanna (Ed.), *Advances in experimental social psychology*, Vol. 39 (pp. 69-126). San Diego, CA: Elsevier Academic Press. [https://doi.org/10.1016/S0065-2601\(06\)39002-8](https://doi.org/10.1016/S0065-2601(06)39002-8)
- Hong, S. (1992). Hong's Psychological Reactance Scale: A further factor analytic validation. *Psychological Reports*, 70, 512-514. <https://doi.org/10.2466/pr0.1992.70.2.512>
- Hong, S., & Faedda, S. (1996). Refinement of the Hong Psychological Reactance Scale. *Educational and Psychological Measurement*, 56, 173-182. <https://doi.org/10.1177/0013164496056001014>
- Hong, S., & Ostini, R. (1989). Further evaluation of Merz's Psychological Reactance Scale.

*Psychological Reports*, 64, 707-710.

<http://dx.doi.org.ccl.idm.oclc.org/10.2466/pr0.1989.64.3.707>

Hong, S., & Page, S. (1989). A psychological reactance scale: Development, factor structure and reliability. *Psychological Reports*, 64, 1323-1326.

<http://dx.doi.org.ccl.idm.oclc.org/10.2466/pr0.1989.64.3c.1323>

Joiner, T. J., & Metalsky, G. I. (2001). Excessive reassurance seeking: Delineating a risk factor involved in the development of depressive symptoms. *Psychological Science*, 12, 371-378. <https://doi.org/10.1111/1467-9280.00369>

Jonas, E., Graupmann, V., Kayser, D. N., Zanna, M., Traut-Mattausch, E., & Frey, D. (2009). Culture, self, and the emergence of reactance: Is there a 'universal' freedom? *Journal of Experimental Social Psychology*, 45, 1068-1080.

<https://doi.org/10.1016/j.jesp.2009.06.005>

Jones, R. A., & Brehm, J. W. (1970). Persuasiveness of one- and two-sided communications as a function of awareness there are two sides. *Journal of Experimental Social Psychology*, 6, 47-56. [https://doi.org/10.1016/0022-1031\(70\)90075-2](https://doi.org/10.1016/0022-1031(70)90075-2)

Kang, Y., Cappella, J., & Fishbein, M. (2006). The attentional mechanism of message sensation value: Interaction between message sensation value and argument quality on message effectiveness. *Communication Monographs*, 73, 351-378.

<http://dx.doi.org/10.1080/03637750601024164>

Karno, M. P., Longabaugh, R., & Herbeck, D. (2010). What explains the relationship between the therapist structure  $\times$  patient reactance interaction and drinking outcome? An examination of potential mediators. *Psychology of Addictive Behaviors*, 24, 600-607.

<http://dx.doi.org.ccl.idm.oclc.org/10.1037/a0020526>

- Kelly, A. E., & Nauta, M. M. (1997). Reactance and thought suppression. *Personality and Social Psychology Bulletin*, 23, 1123-1132. <https://doi.org/10.1177/01461672972311001>
- Kim, S. Y., Levine, T., & Allen, M. (2013). Comparing separate process and intertwined models for reactance. *Communication Studies*, 6, 273-295.  
<http://dx.doi.org/10.1080/10510974.2012.755639>
- Kirchler, E. (1999). Reactance to taxation: Employers' attitudes towards taxes. *The Journal of Socio-Economics*, 28, 131-138. [https://doi.org/10.1016/S1053-5357\(99\)00003-7](https://doi.org/10.1016/S1053-5357(99)00003-7)
- Kray, L. J., Thompson, L., & Galinsky, A. (2001). Battle of the sexes: Gender stereotype confirmation and reactance in negotiations. *Journal of Personality and Social Psychology*, 80, 942-958. <http://dx.doi.org/10.1037/0022-3514.80.6.942>
- Krishnan, L., & Carment, D. W. (1979). Reactions to help: Reciprocity, responsibility and reactance. *European Journal of Social Psychology*, 9, 435-439.  
<http://dx.doi.org/10.1002/ejsp.2420090409>
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York, NY: Springer.
- Leander, N. P., vanDellen, M. R., Rachl-Willberger, J., Shah, J. Y., Fitzsimons, G. J., & Chartrand, T. L. (2016). Is freedom contagious? A self-regulatory model of reactance and sensitivity to deviant peers. *Motivation Science*, 2, 256-267.  
<http://dx.doi.org.ccl.idm.oclc.org/10.1037/mot0000042>
- Levesque, D. A., Velicer, W. F., Castle, P. H., & Greene, R. N. (2008). Resistance among domestic violence offenders: Measurement development and initial validation. *Violence Against Women*, 14, 158-184. [http://dx.doi.org/10.1007/978-1-4419-1005-9\\_215](http://dx.doi.org/10.1007/978-1-4419-1005-9_215)
- Lewin, K. (1959). *Field Theory in Social Science*. New York, NY: Harper & Brothers.
- Lienemann, B. A., & Siegel, J. T. (2016). State psychological reactance to depression public



- service announcements among people with varying levels of depressive symptomatology. *Health Communication, 31*, 102-116. <http://dx.doi.org/10.1080/10410236.2014.940668>
- Lindsey, L. M. (2005). Anticipated guilt as behavioral motivation an examination of appeals to help unknown others through bone marrow donation. *Human Communication Research, 31*, 453-481. <http://dx.doi.org/10.1111/j.1468-2958.2005.tb00879>
- Mazis, M. B., Settle, R. B., & Leslie, D. C. (1973). Elimination of phosphate detergents and psychological reactance. *Journal of Marketing Research, 10*, 390-395. <http://dx.doi.org/10.2307/3149386>
- McGuire, W. J. (1961). The effectiveness of supportive and refutational defenses in immunizing and restoring beliefs against persuasion. *Sociometry, 24*, 184-197.
- Merz, J. (1983). A questionnaire for the measurement of psychological reactance. *Diagnostica, 29*, 75-82. <http://dx.doi.org/10.2307/2786067>
- Mikulincer, M. (1988). The relationship of probability of success and performance following unsolvable problems: Reactance and helplessness effects. *Motivation and Emotion, 12*, 139-153. <https://doi.org/10.1007/BF00992170>
- Miller, C. H., Lane, L. T., Deatrick, L. M., Young, A. M., & Potts, K. A. (2007). Psychological reactance and promotional health messages: The effects of controlling language, lexical concreteness, and the restoration of freedom. *Human Communication Research, 33*, 219-240. <http://dx.doi.org/10.1111/j.1468-2958.2007.00297.x>
- Miller, C. H., Ivanov, B., Sims, J., Compton, J., Harrison, K. J., Parker, K. A., Parker, J. L., & Averbeck, J. M. (2013). Boosting the potency of resistance: Combining the motivational forces of inoculation and psychological reactance. *Human Communication Research, 39*, 127-155. <http://dx.doi.org/10.1111/j.1468-2958.2012.01438.x>

- Miron, A. M., & Brehm, J. W. (2006). Reactance theory - 40 years later. *Zeitschrift Für Sozialpsychologie*, *37*, 9-18. <https://doi.org/10.1024/0044-3514.37.1.9>
- Morgan, S. E., Palmgreen, P., Stephenson, M. T., Hoyle, R. H., & Lorch, E. P. (2003). Associations between message features and subjective evaluations of the sensation value of antidrug public service announcements. *Journal of Communication*, *53*, 512-526. <http://dx.doi.org/10.1111/j.1460-2466.2003.tb02605.x>
- Moyer-Gusé, E. (2008). Toward a theory of entertainment persuasion: Explaining the persuasive effects of entertainment-education messages. *Communication Theory*, *18*, 407-425. <http://dx.doi.org/10.1111/j.1468-2885.2008.00328.x>
- Moyer-Gusé, E., & Nabi, R. L. (2010). Explaining the effects of narrative in an entertainment television program: Overcoming resistance to persuasion. *Human Communication Research*, *36*, 26-52. . <http://dx.doi.org/10.1111/j.1468-2885.2009.01367.x>
- Nemeth, C. (1970). Effects of free versus constrained behavior on attraction between people. *Journal of Personality and Social Psychology*, *15*, 302-311. <http://dx.doi.org/10.1037/h0029605>
- Nezlek, J., & Brehm, J. W. (1975). Hostility as a function of the opportunity to counteraggress. *Journal of Personality*, *43*, 421-433. <http://dx.doi.org/10.1111/j.1467-6494.1975.tb00714.x>
- Norman, P., & Wrona-Clarke, A. (2015). Combining self-affirmation and implementation intentions to reduce heavy episode drinking in university students. *Psychology of Addictive Behaviors*, *30*, 434-441. <http://dx.doi.org.ccl.idm.oclc.org/10.1037/adb0000144>
- Organ, D. W. (1974). Social exchange and psychological reactance in a simulated superior-

- subordinate relationship. *Organizational Behavior & Human Performance*, *12*, 132-142. [https://doi.org/10.1016/0030-5073\(74\)90042-7](https://doi.org/10.1016/0030-5073(74)90042-7)
- Pallak, M. S., & Heller, J. F. (1971). Interactive effects of commitment to future interaction and threat to attitudinal freedom. *Journal of Personality and Social Psychology*, *17*, 325-331. <http://dx.doi.org/10.1037/h0030591>
- Palmgreen, P., Donohew, L., Lorch, E. P., Rogus, M., Helm, D., & Grant, N. (1991). Sensation seeking, message sensation value, and drug use as mediators of PSA effectiveness. *Health Communication*, *3*, 217-227. [http://dx.doi.org/10.1207/s15327027hc0304\\_4](http://dx.doi.org/10.1207/s15327027hc0304_4)
- Pratto, F., Sidanius, J., Stallworth, L. M., & Malle, B. (1994). Social dominance orientation: A personality variable predicting social and political attitudes. *Journal of Personality and Social Psychology*, *67*, 741-763. <http://dx.doi.org/10.1037/0022-3514.67.4.741>
- Proulx, T. (2012). Threat-compensation in social psychology: Is there a core motivation? *Social Cognition*, *30*, 643-651. <https://doi.org/10.1521/soco.2012.30.6.643>
- Proulx, T., Inzlicht, M., & Harmon-Jones, E. (2012). Understanding all inconsistency compensation as a palliative response to violated expectations. *Trends in Cognitive Sciences*, *16*, 285-291. <https://doi.org/10.1016/j.tics.2012.04.002>
- Quick, B. L. (2012). What is the best measure of psychological reactance? An empirical test of two measures. *Health Communication*, *27*, 1-9. <http://dx.doi.org/10.1080/10410236.2011.567446>
- Quick, B. L. (2013). Perceived message sensation value and psychological reactance: A test of the dominant thought disruption hypothesis. *Journal of Health Communication*, *18*, 1024-1038. <http://dx.doi.org/10.1080/10810730.2013.768728>

- Quick, B. L., Bates, B. R., & Quinlan, M. R. (2009). The utility of anger in promoting clean indoor air policies. *Health Communication, 24*, 548-561.  
<http://dx.doi.org/10.1080/10410230903104939>
- Quick, B. L., & Considine, J. R. (2008). Examining the use of forceful language when designing exercise persuasive messages for adults: A test of conceptualizing reactance arousal as a two-step process. *Health Communication, 23*, 483-491. <http://dx.doi.org.ccl.idm.oclc.org/10.1080/10410230802342150>
- Quick, B. L., & Kim, D. K. (2009). Examining reactance and reactance restoration with South Korean adolescents: A test of psychological reactance within a collectivist culture. *Communication Research, 36*, 765-782. <https://doi.org/10.1177/0093650290346797>
- Quick, B. L., Shen, L., & Dillard, J. P. (2013). Reactance theory and persuasion. In J. P. Dillard, L. Shen (Eds.), *The SAGE handbook of persuasion: Developments in theory and practice (2nd ed.)* (pp. 167-183). Thousand Oaks, CA: Sage Publications, Inc.
- Quick, B. L., & Stephenson, M. T. (2008). Examining the role of trait reactance and sensation seeking on perceived threat, state reactance, and reactance restoration. *Human Communication Research, 34*, 448-476. <http://dx.doi.org/10.1111/j.1468-2958.2008.00328.x>
- Rains, S. A. (2013). The nature of psychological reactance revisited: A meta-analytic review. *Human Communication Research, 39*, 47-73. <http://dx.doi.org/10.1111/j.1468-2958.2012.01443.x>
- Rains, S. A., & Turner, M. M. (2007). Psychological Reactance and Persuasive Health

- Communication: A Test and Extension of the Intertwined Model. *Human Communication Research*, 33, 241-269. <http://dx.doi.org/10.1111/j.1468-2958.2007.00298.x>
- Rhodewalt, F., & Marcroft, M. (1988). Type A behavior and diabetic control: Implications of psychological reactance for health outcomes. *Journal of Applied Social Psychology*, 18, 139-159. <http://dx.doi.org/10.1111/j.1559-1816.1988.tb00011.x>
- Richards, A. S., & Banas, J. A. (2015). Inoculating against reactance to persuasive health messages. *Health Communication*, 30, 451-460. <http://dx.doi.org/10.1080/10410236.2013.867005>
- Richards, A. S., Banas, J. A., & Magid, Y. (2017). More on inoculating against reactance to persuasive health messages: The paradox of threat. *Health Communication*, 32, 890-902. <http://dx.doi.org/10.1080/10410236.2016.1196410>
- Rosenberg, B. D., & Siegel, J. T. (2016). The effect of inconsistency appeals on the influence of direct-to-consumer prescription drug advertisements: An application of goal disruption theory. *Journal of Health Communication*, 21, 217-227. <http://dx.doi.org/10.1080/10810730.2015.1058439>
- Rosenberg, B. D., & Siegel, J. T. (2017a). Threatening uncertainty and psychological reactance: Are freedom threats always noxious? Manuscript under review.
- Rosenberg, B. D., & Siegel, J. T. (2017b). The broad influence of freedom threats: An expansion of psychological reactance theory. Manuscript in preparation.
- Rosenberg, B. D., Lewandowski, J. A., & Siegel, J. T. (2015). Goal disruption theory, military personnel, and the creation of merged profiles: A mixed methods investigation. *Journal of Mixed Methods Research*, 9, 51-69. <https://doi.org/10.1177/1558689813508006>
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of

- reinforcement. *Psychological Monographs: General and Applied*, 80, 1-28.  
<http://dx.doi.org/10.1037/h0092976>
- Schüz, N., Schüz, B., & Eid, M. (2013). When risk communication backfires: Randomized controlled trial on self-affirmation and reactance to personalized risk feedback in high-risk individuals. *Health Psychology*, 32, 561-570. <http://dx.doi.org/10.1037/a0029887>
- Seibel, C. A., & Dowd, E. T. (1999). Reactance and therapeutic noncompliance. *Cognitive Therapy and Research*, 23, 373-379. <http://dx.doi.org.ccl.idm.oclc.org/10.1023/A:1018751817046>
- Seligman, M. P. (1975). *Helplessness: On depression, development, and death*. New York, NY: W H Freeman/Times Books/ Henry Holt & Co.
- Shah, J. Y., Friedman, R., & Kruglanski, A. W. (2002). Forgetting all else: On the antecedents and consequences of goal shielding. *Journal of Personality and Social Psychology*, 83, 1261-1280. <http://dx.doi.org/10.1037/0022-3514.83.6.1261>
- Shen, L. (2010). Mitigating psychological reactance: The role of message-induced empathy in persuasion. *Human Communication Research*, 36, 397-422.  
<http://dx.doi.org/10.1111/j.1468-2958.2010.01381.x>
- Shen, L. (2011). The effectiveness of empathy-versus fear-arousing antismoking PSAs. *Health Communication*, 26, 404-415. . <http://dx.doi.org/10.1080/10410236.2011.552480>
- Shen, L., & Dillard, J. P. (2005). Psychometric properties of the Hong Psychological Reactance Scale. *Journal of Personality Assessment*, 85, 74-81.  
[http://dx.doi.org/10.1207/s15327752jpa8501\\_07](http://dx.doi.org/10.1207/s15327752jpa8501_07)
- Shen, L., & Dillard, J. P. (2007). Reactance proneness assessment. Reactance proneness

- assessment. In R. A. Reynolds, R. Woods, J. D. Baker, R. A. Reynolds, R. Woods, J. D. Baker (Eds.), *Handbook of research on electronic surveys and measurements* (pp. 323-329). Hershey, PA: Idea Group Reference/IGI Global.  
<http://dx.doi.org.ccl.idm.oclc.org/10.4018/978-1-59140-792-8.ch043>
- Shoham, V., Bootzin, R. R., Rohrbaugh, M. J., & Urry, H. (1996). Paradoxical versus relaxation treatment for insomnia: The moderating role of reactance. *Sleep Research, 24*, 365.
- Shoham, V., Trost, S. E., & Rohrbaugh, M. J. (2004). From state to trait and back again: Reactance theory goes clinical. In R. A. Wright, J. Greenberg, & S. S. Brehm (Eds.), *Motivational analyses of social behavior: Building on Jack Brehm's contributions to psychology* (pp. 167-185). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Shoham-Salomon, V., Avner, R., & Neeman, R. (1989). You're changed if you do and changed if you don't: Mechanisms underlying paradoxical interventions. *Journal of Consulting and Clinical Psychology, 57*, 590-598. <http://dx.doi.org/10.1037/0022-006X.57.5.590>
- Shoham-Salomon, V., & Rosenthal, R. (1987). Paradoxical interventions: A meta-analysis. *Journal of Consulting and Clinical Psychology, 55*, 22-28. <http://dx.doi.org/10.1037/0022-006X.55.1.22>
- Siegel, J. T. (2013). Illuminating the psychological processes associated with renal failure and living donation considerations: An application of goal disruption theory. In M. A. Lauri (Ed.), *Organ donation and transplantation: An interdisciplinary approach* (pp. 117-140). Hauppauge, NY: Nova Science.
- Siegel, J. T., & Rosenberg, B. D. (2017). Expanding psychological reactance theory: The reactive spiral. Manuscript in preparation.
- Silvia, P. J. (2006). A skeptical look at dispositional reactance. *Personality and Individual*

- Differences*, 40, 1291-1297. <https://doi.org/10.1016/j.paid.2005.11.013>
- Sinclair, H. C., Felmlee, D., Sprecher, S., & Wright, B. L. (2015). Don't tell me who I can't love: A multimethod investigation of social network and reactance effects on romantic relationships. *Social Psychological Quarterly*, 77, 77-99. doi:10.1177/019027251456525.
- Sittenthaler, S., Jonas, E., & Traut-Mattausch, E. (2016). Explaining self and vicarious reactance: A process model approach. *Personality and Social Psychology Bulletin*, 42, 458-470. <https://doi.org/10.1177/0146167216634055>
- Sittenthaler, S., Steindl, C., & Jonas, E. (2015). Legitimate vs. illegitimate restrictions—a motivational and physiological approach investigating reactance processes. *Frontiers in Psychology*, 6, 632. <http://dx.doi.org/10.3389/fpsyg.2015.00632>
- Sittenthaler, S., Traut-Mattausch, E., & Jonas, E. (2015). Observing the restriction of another person: Vicarious reactance and the role of self-construal and culture. *Frontiers in Psychology*, 6, 1052. <http://dx.doi.org/10.3389/fpsyg.2015.01052>
- Sittenthaler, S., Traut-Mattausch, E., Steindl, C., & Jonas, E. (2015). Salzburger State Reactance Scale (SSR Scale): Validation of a scale measuring state reactance. *Zeitschrift für Psychologie*, 223, 257-266. <https://doi.org/10.1027/2151-2604/a000227>
- Sly, D. F., Hopkins, R. S., Trapido, E., & Ray, S. (2001). Influence of a counteradvertising media campaign on initiation of smoking: The Florida "truth" campaign. *American Journal of Public Health*, 91, 233-238. <http://dx.doi.org.ccl.idm.oclc.org/10.2105/AJPH.91.2.233>
- Steele, C. M. (1988). The psychology of self-affirmation: Sustaining the integrity of the self. In L. Berkowitz (Ed.), *Advances in experimental social psychology*, Vol. 21 (pp. 261-302). New York, NY: Academic Press. [https://doi.org/10.1016/S0065-2601\(08\)60229-4](https://doi.org/10.1016/S0065-2601(08)60229-4)



- Steindl, C., & Jonas, E. (2015). The dynamic reactance interaction—How vested interests affect people's experience, behavior, and cognition in social interactions. *Frontiers in Psychology, 6*, 1-16. <http://dx.doi.org/10.3389/fpsyg.2015.01752>
- Steindl, C., Jonas, E., Klackl, J., & Sittenthaler, S. (2015). Psychological reactance increases relative left frontal cortical activation. Manuscript in preparation.
- Steindl, C., Jonas, E., Sittenthaler, S., Traut-Mattausch, E., & Greenberg, J. (2015). Understanding psychological reactance: New developments and findings. *Zeitschrift Für Psychologie, 223*, 205-214. <http://dx.doi.org.ccl.idm.oclc.org/10.1027/2151-2604/a000222>
- Swoboda, J. S., Dowd, E. T., & Wise, S. L. (1990). Reframing and restraining directives in the treatment of clinical depression. *Journal of Counseling Psychology, 37*, 254-260. <http://dx.doi.org/10.1037/0022-0167.37.3.254>
- Tennen, H., Press, S., Rohrbaugh, M., & White, L. (1981). Reactance theory and therapeutic paradox: A compliance-defiance model. *Psychotherapy: Theory, Research & Practice, 18*, 14-22. <http://dx.doi.org/10.1037/h0085955>
- Thomas, A., Donnell, A. J., & Buboltz, W. J. (2001). The Hong Psychological Reactance Scale: A confirmatory factor analysis. *Measurement and Evaluation in Counseling and Development, 34*, 2-13.
- Thomson, A. L., & Siegel, J. T. (2017). Elevation: A review of scholarship on a moral and other-praising emotion. *The Journal of Positive Psychology, 12*, 628-638. <http://dx.doi.org.ccl.idm.oclc.org/10.1080/17439760.2016.1269184>
- Tolman, E. (1932). *Purposive Behavior in Animals and Men*. Oxford, England: Appleton-Century.

- Tracey, T. J., Ellickson, J. L., & Sherry, P. (1989). Reactance in relation to different supervisory environments and counselor development. *Journal of Counseling Psychology, 36*, 336-344. <http://dx.doi.org/10.1037/0022-0167.36.3.336>
- Tucker, R. K., & Byers, P. Y. (1987). Factorial validity of Merz's Psychological Reactance Scale. *Psychological Reports, 61*, 811-815.  
<http://dx.doi.org.ccl.idm.oclc.org/10.2466/pr0.1987.61.3.811>
- Turner, M. M. (2007). Using emotion in risk communication: The anger activism model. *Public Relations Review, 33*, 114-119. <https://doi.org/10.1016/j.pubrev.2006.11.013>
- Wicklund, R. A. (1974). *Freedom and reactance*. Oxford, England: Lawrence Erlbaum.
- Wicklund, R. A., & Brehm, J. W. (1968). Attitude change as a function of felt competence and threat to attitudinal freedom. *Journal of Experimental Social Psychology, 4*, 64-75.  
[https://doi.org/10.1016/0022-1031\(68\)90050-4](https://doi.org/10.1016/0022-1031(68)90050-4)
- Wicklund, R. A., Slattum, V., & Solomon, E. (1970). Effects of implied pressure toward commitment on ratings of choice alternatives. *Journal of Experimental Social Psychology, 6*, 449-457. [https://doi.org/10.1016/0022-1031\(70\)90055-7](https://doi.org/10.1016/0022-1031(70)90055-7)
- Wood, W., & Quinn, J. M. (2003). Forewarned or forearmed? Two meta-analytic syntheses of forewarnings on influence appeals. *Psychological Bulletin, 129*, 119-138.  
<http://dx.doi.org/10.1037/0033-2909.129.1.119>
- Worchel, S., & Brehm, J. W. (1970). Effect of threats to attitudinal freedom as a function of agreement with the communicator. *Journal of Personality and Social Psychology, 14*, 18-22. <http://dx.doi.org/10.1037/h0028620>
- Wortman, C. B. & Brehm, J. W. (1975). Response to uncontrollable outcomes: An integration of

reactance theory and the learned helplessness model. In L. Berkowitz (Ed.), *Advances in experimental social psychology*, Vol. 8. New York, NY: Academic Press.

[https://doi.org/10.1016/S0065-2601\(08\)60253-1](https://doi.org/10.1016/S0065-2601(08)60253-1)

Wright, R. A. (2008). Refining the prediction of effort: Brehm's distinction between potential motivation and motivation intensity. *Social and Personality Psychology Compass*, 2, 682-701. <http://dx.doi.org/10.1111/j.1751-9004.2008.00093.x>

Wright, R. A., Agtarap, S. D., & Mlynski, C. (2015). Conversion of reactance motives into effortful goal pursuit: Implications of Brehm's theory of motivation intensity. *Zeitschrift Für Psychologie*, 223, 267-276. <https://doi.org/10.1027/2151-2604/a000228>

Zemack-Rugar, Y., Moore, S. G., & Fitzsimons, G. J. (2017). Just do it! Why committed consumers react negatively to assertive ads. *Journal of Consumer Psychology*, 27, 287-301. <https://doi.org/10.1016/j.jcps.2017.01.002>

Zucker, D., Hopkins, R. S., Sly, D. F., Urich, J., Kershaw, J. M., & Solari, S. (2000). Florida's "truth" campaign: A counter-marketing, anti-tobacco media campaign. *Journal of Public Health Management Practice*, 6, 1-6.