CHAPTER 38

Rethinking Duality
Criticsisms and Ways Forward

Melissa J. Ferguson, Thomas C. Mann, and Michael T. Wojnowicz

The chapters in this volume are undoubt-
edly replete with examples of philosophers’
and social scientists’ historical recognition
of the dual nature of human thought. Writ-
ers from the classical era through modern
times have noted many times over that
human behavior seems to emerge from
dueling forces in the psyche (Newell, 1973),
and contemporary social and cognitive psy-
chologists have conceptualized these two
forces as mental systems that can be stud-
ed empirically. In this chapter, we raise
critical and methodological concerns about
dual-mode models in the social cogni-
tive psychological literature. In our view,
the problems that fall out of a dual-mode
approach to social cognitive research may
outweigh its advantages.

GOING BEYOND THESE CONCERNS, WE
SUGGEST NEW WAYS FORWARD, INCLUDING A
RECONSIDERATION OF HOW TO THINK OF DISEMBSATION
BETWEEN OUTCOMES, AND WAYS TO UNDERSTAND
THE INVOLVEMENT OF MOTIVATION AND CONTROL
HUMAN THOUGHT. WE ALSO CONSIDER THE
TEST MODELS OF PROCESS AND ADVOCATE FOR
A GREATER EMPHASIS ON TESTING THE INDEPENDENT
ROLE OF THE OPERATING CONDITIONS IN WHICH
A PHENOMENON EMERGES.

CRITICISMS OF DUALITY

Nomenclature

Before addressing the evidence for dual-
mode models, we first note that much of
the social cognitive literature could be clar-
ified with greater precision of terminology,
particularly regarding the terms system,
process, and representation (e.g., for more
discussion, see Evans, 2008; Ferguson &
Fukukura, 2012; Gigerenzer & Regier, 1996;
Keren & Schul, 2009; Moors & De Houwer,
2006; Newstead, 2000). One of the
biggest sources of confusion, it seems to us,
is the widely variable application of the term
system and its tendency to be interchanged
with process. This leads to confusion within
and outside the field, as scholars working in
areas such as cognition, neuroscience, and
perception attempt to map their conception
of system onto ours (and cannot).

Additionally, the terms process and rep-
resentation are defined in typical ways that
do not capture their complexity in the cog-
nitive sciences literature. Whereas the use
of process in the social psychological literature
usually refers to associative versus rule-based
operations (e.g., for definitions of these
terms, see Chomsky, 1980, 1986; Haub &
Chater, 1998; Pylyshyn, 1980; Searle, 1980;
Soman, 1996; Smith, Langston, & Nisbett,
1992), the concept of representation usually
refers to distributed versus symbolic (i.e., for
definitions see e.g., Barsalou, 2008; Haub &
Chater, 1998; Soman, 1996). And, these
types of representation are often confounded
with these types of process, in that it is
assumed that rule-based processing depends
solely (e.g., Soman, 1996; but see discussion
in Haub & Chater, 1998) or partially (Smith
& DeCoste, 2000) on symbolic representa-
tions, while associative processing (based on
similarity or contiguity) is assumed exclu-
sively to involve distributed representations
(e.g., Barsalou, 1986; Brown; Smith & DeCoste,
2000; cf. Haub & Chater, 1998; Mitchell,
Ames, Jenkins, & Bains, 2009). In the cog-
nitive sciences literature, however, some have
argued that associative versus rule-based
processing is not inherently wedded to one
type of representation, and intense debate
on the capacities and plausibility of each
type of representation continues (e.g., Barsa-
lo, 1999, 2008; Diederich & Markman,
2003; Poldor, 1981; Rumelhart, 1989; Van
Gelder, 1990). There is also a widespread
tendency to conflate what a process does (e.g.,
associative versus rule-based operations)
with characteristics of its operation (e.g.,
awareness, intention, speed, control; Goldstein
& Rofelshausen, 2009; Lieber-
man, 2003; Moors & De Houwer, 2006;
Sherman, 2004a; Sherman et al., 2008).
There is also a crucial operating characteristics
of systems that analysts need to be aware of,
Moors & De Houwer, 2006) and also do not reliably or strongly
 correlate with process or with each other (see Burgh, 1994). For example, although it
is widely assumed that associative process-
ing occurs without awareness or control,
there is in fact surprisingly little evidence for
this (e.g., Berry, Shank, Li, Raini, & Hen-
son, 2011; Berry & Shank, Speekenhirk, &
Hensom, 2011; Gwironski, Bodenhausen,
& Becker, 2007; Mitchell et al., 2009).
impossible to rely on responses that manifest "associative" or "rule-like" qualities to argue for underlying process. The robustness of rules allows for any "associative" responses to be modeled in terms of rules (also see Kruglanski & Dechesne, 2006; Kruglanski, Ehr, Pierno, Manuanelli, & Chun, 2006). Some current work with concurrent systems, which have been held up as the hardware implementing associative process- ing (e.g., Sloman, 1996; Smith & DeCoster, 2000), have proven capable of modeling deductive syllogisms (Rogers & McClelland, 2004), causal reasoning (Read & Montoya, 1999), executive control (Rougier, Noelle, Braver, Cohen, & O'Reilly, 2005) and serial-like processing (Spivey, 2007) all of which are usually held to characterize the rule-based system. In other words, outcomes that are modeled in dual-systems modeling can be still modeled with rules, and outcomes that seem based in rule-based classification independent of similarity/congruity can also be modeled in an associative-like structure. Outcomes might vary in different instances not because of fundamentally distinct systems or processes, but because of different parameter values within a single process (e.g., Smiley & Berry, 2012; Kruglanski et al., 2006). Sloman (1996) argues that the best evi- dence for dual systems can be marshaled in support of dual-systems theories comes in the form of simultaneous contradictory belief system ("Crite- ries"), which refers to a conscious sense that two conflicting responses are both appropri- ate, at the same moment in time. Despite its logic, Criterion S presents a number of problems. The criterion is an inference about process drawn from introspection, which are marred by limitations due to the introspection likely can only imperfectly tap. It is also possible that even if beliefs are simultaneous, they may be produced by the same system. For example, it may be the case that "simultaneous contradictory beliefs" never actually occur per se; rather, a conflict could emerge from two contradictory rule- like beliefs (e.g., Chater, 2009). Or instances of manifest conflicting beliefs might truly reflect ambiguity about the application of particular rules (Betsch & Fiedler, 1999; Gigerenzer & Regier, 1996) and by some accounts this could be any complex system that has many rules from which to select in any instance (Kelso & Engstrom, 2000). Finally, even if one wishes to maintain that a given system must have a single output for any input, it is not clear why this output could not consist of a conscious state of ambivalence.

Finally, theorists sometimes use disso- ciation of brain activation to make the case for dual systems (e.g., Cushman, Young, & Greene, 2010; Lieberman, Gaunt, Gilbert, & Trope, 2002; Satpute & Lieberman, 2006; Smith & DeCoster, 2000; Spunt & Lieberman, 2013). For example, in their general dual-systems modeling and DeCoster (2000) cite the role of the hippocampus in implementing a fast-learning, effortful, symbolic processing system, and draw on lesion research to demonstrate the independence of this system from a slower, more deliberate system elsewhere. Such evi- dence suffers from the same issues cited ear- lier, such as the inability of dissociation evi- dence to establish two independent systems (e.g., Dunn & Kirsner, 2003). In fact, disso- ciations are possible in the case of lesions within the same brain structure (Huber, 2004).

Other evidence that is problematic for notions of independent systems at the level of the brain comes from the "dual-process" (2010) neural trace. Under Ander- son's (2007a, 2007b, 2010) conception, new functions are implemented in the brain by drawing on dispersed areas of cortex that previously participated in other functioning, such that localized areas are no longer used to participate in a variety of functions. In other words, a particular function (e.g., syn- tactic reasoning) would not be limited to a dedicated section or circuit of cortex, but by a pattern of activity across cortical elements that each participate in other functions when active in other combina- tions. These findings make it difficult to conclude that particular brain areas are the exclusive domain of any one particular type of processing. It is further doubt on the idea that even apparent cortical dissociations support dual-systems claims.

WAYS FORWARD

We believe the dual-mode approach has gotten entrenched, and its tentative stat- us in the field has thus far not been overtly contested. For example, some of the key assumptions on which many social cognitive theories are based are undermined by empirical findings and conceptual arguments. These examples also stand as critiques of dual-mode theory, but they additionally point to a need for ways to con- ceptualize some general issues in the litera- ture. We consider below two examples of such assumptions, then consider alternative ways to explain dissociated outcomes and the role of motivation.

Rethinking Learning

One of the most widely agreed upon differ- ences between associative and rule-based processing, or between "System 1" and "System 2," is the rate or ease of learning. System 1 (or, associative processing) and System 2 (or, rule-based processing) are commonly referred to as the "slow" versus "fast" learning systems, respectively (for a review, see Gowers & Smith, 2007; cf. Gaw- ronski & Bodenhausen, 2006, 2007; Gaw- ronski & Bodenhausen, 2006, 2007, 2011; Mischel & Ebbesen, 1970). Nu- mero theories assume that associa- tive processes are slow learning because they focus on processes in the implicit memory system, and the implicit memory system in system 1 has been historically characterized as slow learning. Rule-based processing, on the other hand, is thought to be fast learning. In the social psychological litera- ture, associative (or implicit) processing is therefore assumed to enable learning about a new event or pattern only after a long time, and after a large amount of experience. Rule- based, or symbolic or explicit processes, on the other hand, are assumed to enable learn- ing after a single trial.

It is important to note that this assump- tion that associative processing is the slowest is one of the most central criteria of most dual-mode models. This is because much of the argument for the neces- sity of a dual system rests on the assumption that dual independent systems comprises of human and nonhuman animals' purposed needs for both fast and slow learning (see Sherry & Schacter, 1987, 1989; for a discussion of the imperative for independent fast and slow learning systems in humans and other species). Thus, the evolutionary or functional explanation for two separate learning systems is based directly on (incompatible) learning needs.

Despite the centrality of the assumption of differential learning rates in many dual- mode models, much work calls this assump- tion into question in ways that highlight both the need to move beyond such conceptions and, importantly, strategies for doing so. First, contrary to widespread assumptions in the social cognitive literature, many schol- ars argue that implicit memory is actually composed of various kinds of processes that have fundamentally different characteristics, including learning rate (see Anderson & Ran- ner, 2011; Poldek & Forde, 2008; Stanser & Kandel, 1999). For example, whereas semantic memory is often characterized as slow to develop (McClelland, Naumann, & O'Reilly, 1995), as well as asper- tive conditioning, can be acquired across animal models and in humans very rapidly, sometimes in a single trial (e.g., Cahill & McGaugh, 1995; Fadem, 1995; Garcia, Kinzelrold, & Kellen, 1955; Herman, Vaquer et al., 2003; LeDoux, 2003; Luss- ner & Ross, 1967; Ratner, 1966; Schuman, 1966; Yin & Knowlton, 2006). As a result, the evolutionary or functional explanation for two separate learning systems is based directly on (incompatible) learning needs.

In addition to the data showing that appre- citive and aversive conditioning, (i.e., learning assumed to be based on associative process- ing) can happen rapidly, there also exists another type of evidence of fast learning. Studies from the social cognitive attitudes and literatures show that participants can develop implicit (or System 1, associative-based) atti- tudes toward objects on the basis of new verbal (propositionally based) information before any conscious thought (Ashburn-
Nardo, Vol, & Mensforth, 2011; Castelli, van Turennout, Smith, & Arcuri, 2004; Gwowski et al., 2007; Gwowski & Lebel, 2008; Gregg, Selke, & Banaji, 2006). This is especially true instructions given to a group or class and its implications are often presumed to depend on System 2 processing (Epstein, 1994; Buehler & Mellers, 2006). For instance, asked participants to suppose that the two novel groups, the Nullsum and the Lepitops, comprised good versus evil people. In an Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) administered 1 or 2 minutes later, they showed greater implicit preference for whichever group was described as good.

Even more recent work shows that people can even rapidly revise newly formed implicit attitudes based on new salient information. Cane and Ferguson (2012) predicted that people should show revision in their newly formed implicit attitudes for minimally self-relevant novel objects. When participants were assigned to groups based on a bogus personality test, they showed an implicit preference toward their ingroup only minutes later, providing further evidence that these attitudes form extremely rapidly. However, the authors then told some of them that there was a mistake and that the objects actually belonged to the other group. Their implicit attitudes nevertheless then immediately showed a significant shift toward the other group, showing fast revision. Whereas previous work had found no evidence of fast revision of attitudes toward fictional groups that had no relevance to participants, this recent work shows that such revision commonly occurs when the novel attitude objects have some minimal relevance, such as one’s ingroup. We also demonstrated that revised attitudes toward a novel object were just as strong as their newly formed attitudes had been, suggesting that the evidence for fast revision was not implicit ambivalence (Petty, Tormala, Brinol, & Jarvis, 2006).

In summary, evidence from two different areas of psychological science (personality and social cognition in humans) points strongly against the slow learning claims for System 1 types of processes, at least in the realm of attitudes. This kind of evidence may be interpreted in various ways: It can be seen as casting doubt on the differentiating rates typically linked with the two different models, casting doubt on the assumption that they are two models, or casting doubt on the separate models for processes altogether. Regardless of the right answer, there is ample evidence that some people are able to process new information extremely quickly. Furthermore, the recent findings suggest that processing speed is no longer a question of whether people can process information quickly, but rather a question of whether people can process information quickly enough to change their behavior.

There is now an impressive body of evidence demonstrating, for example, that various types of manipulations that produce change in implicit versus explicit measures (e.g., see Gawronski & Bodenhausen, 2006), and the reasons for such dissociations remain unclear (e.g., Christiansen & Chater, 2001; Pott, Gotte, & Maia, 2003). Thus, the common claim that System 2 processing is more "verbal" or language-based seems unwarranted.

There are related and frequently asserted claims that only conscious (rule-based) processing could enable the reading of multi-word phrases and abstract mathematics (e.g., Deutsch, Gawronski, & Strack, 2006; Greenwald & Liu, 1985, 1992; Baumeister & Musacchio, 2010; Morewedge & Kahne, 2011; Winkielman, 2008; but see, e.g., Anderson, Spoerri, & Bennett, 1994). However, recent work challenges this assumption by showing that people can solve math problems and read multi-word phrases nonconsciously (Sklar, Levy, Goldstein, Mandel, Maril, & Hassin, 2012). Sklar and colleagues used a recently developed method called continuous flash suppression (CFS) to present the material (e.g., an equation) to one eye with a simultaneous presentation of rapidly changing masks (noise) to the other eye. The continuous flashes of noise to the other eye keep the static information from becoming conscious, allowing the participants to respond for up to 2 seconds. For nonconscious reading, Sklar and colleagues (2012) showed that participants were able to nonconsciously read a process whether the meaning of three-word sentences constituted a semantic violation (e.g., "I ironed coffee") or not ("I ironed clothes"). As for evidence of nonconscious arithmetic, when presented with equations (e.g., 2 + 3 = 5 ...), participants responded significantly faster to solutions of those equations (e.g., 10) than to nonsolutions (e.g., 11). The findings show that cognitive operations that classically are assumed to be uniquely enabled by rule-based thinking can occur nonconsciously.

These findings are a perfect example of how the notion of processing (in this case, rule-based vs. associative) could potentially be confounded with a characteristic of the operation of the process (consciousness). To the extent that one believes that rule-based processing has to be conscious (confounding the two), these findings would indicate
that the process at play here cannot be rule-based (and could, instead, be random). However, if one believes, as we do, that the operating characteristics of a process can be understood in terms of the goals that it is seeking to achieve (following rules vs. operating by similarity and constancy), then one would not hold that what a computer is doing is the same as what a human is doing (see Soman, 1996). So, therefore, these data are agnostic about what the process is, and instead tell us simply that these outcomes that have been historically branded as consciousness-dependent (reading, doing math), however they are enabled or solved, can in fact operate without consciousness.

Rethinking Disassociated Outcomes

We noted earlier that many scholars interpret empirical dissociations across (implicit vs. explicit) behavioral measures as evidence for two different systems, or processes. We also noted that a dual-mode model is certainly consistent with such dissociation. But use of evidence could also be consistent with a single-system/process model. What type of single-system model might explain such dissociations? One interpretation is that the case of dissociation in social psychology: the difference in attitudes toward racial/ethnic groups. Let’s take the case of implicit versus explicit measure is used. For example, when racial outgroup attitudes are measured after relatively long processing durations (e.g., on the IAT), they often appear negative, whereas when the same attitudes are measured after relatively short cognitive processing durations (e.g., on the IAT), they often appear positive, or even positive (e.g., Davidko, Kawakami, & Gaertner, 2002).

The dual-mode interpretation of these data is that whereas the two modes are explained by System 1, the endorsed responses are often explained by System 2 (or a combination of System 1 and System 2; see Gawronski & Bodenhausen, 2006; Strack & Deutsch, 2004). A single-system interpretation of these outcomes comes from the mathematical modeling of dynamical systems (Hilts & Smale, 1974). Dynamical systems models (technically, coupled differential equations) describe the dynamics of a group of multiple interacting components. Dynamical systems frequently exhibit a property of self-organization (e.g., Kelso 1995); that is, the system’s components gradually assemble themselves from a disordered initial state so that they do so without a central executive directing those changes. The key idea here rests on the mathematical concept of a strange attractor. To put the key concepts together, the dynamical system comprises multiple components that interact. The state of the system is a pattern of numbers that describes each component’s value at some particular time. After the system has been externally perturbed, for example, by a stimulus, this is called an initial condition. The “dynamics” describe how the system moves itself, toward particular states (called the stable states or “attractors” of the system).

In the brain, the neural activity of the brain has been considered a dynamical system by many theories (e.g., Beer, 1995; Kelso, 1995; Sperry, 2007). The brain comprises multiple interacting components (brain regions, or neurons), and it is continuously perturbed by sensory input and by ongoing activity in other brain regions or neurons that interact due to patterns of neural connectivity (a field of interest that is known as neural networks or, in particular, the theory of interneuronal communication). Now, what might an attractor be in the brain? Let’s first illustrate the concept of an attractor using a simple model. Consider a system of springs (e.g., in a simple pendulum). These are dynamical systems (e.g., in the case of the Space Needle (650 ft. above the ground) with zero velocity. That state (of being 650 ft. above the ground) is highly unstable, and the ball is pushed to the ground (by the force of gravity). Thus, the “attractor” in that simple system is the ground (more specifically, the height of 0 ft). Dynamical systems approaches to neural cognition extend this concept to the brain by considering it as a high-dimensional system whose components are neurons and whose states are, for example, the state of each neuron. The dynamical systems perspective observes that certain firing configurations could be highly unstable, because of the network effect of communication between neurons (Learnt patterns of synaptic connectivity can give rise to a network of oscillations, which can then interact in complex ways). Thus, the activity of the brain can be viewed as a dynamical system, with the brain’s attractors representing stable states of neural activity. For example, the brain’s attractors might represent different cognitive states, such as alertness, relaxation, or sleep.

Rethinking Duality

The important observation is that just as a bird can fly toward its nest through multiple pathways, a dynamical system can transition into its eventual decision (stable firing pattern) according to potentially very many different trajectories (e.g., from a highly evolving firing patterns over the preceding temporal period). Let us imagine from a neural perspective, the decision is made when the conflict distributed across the acocphocarpous system is resolved into a single harmonious decision. A dynamical systems model (whether or not of any of the ones listed earlier) describes the dynamics of this decision process; in particular, it describes how a certain range of conflicts across information sources dynamically resolves into a decision. Let us restate this as follows: that, as self-reported data suggest, white people in general possess greater overall informational support for “liking” rather “disliking” both black people and white people. However, let us further assume that, as IAT findings suggest, white people in general possess greater overall informational support for “liking” rather “disliking” both black people and white people. Then a stochastic dynamical systems model makes very particular predictions about the dynamics of the decision—predictions that can be “read off” the equations of the previous models (see, e.g., the introduction to Wojcik, Perdue, Devine, & Sperry, 2009). In particular, such models predict that the decision would exhibit deviation (a general trend of moving through regions of decision space with greater input displace in the transitional moments of
Rethinking Goals and Control

The dynamical systems perspective is also currently being used to help explain goal pursuit and executive control by modeling brain systems as interacting parallel distributed processing networks, whose cognitive processing is characterized by interaction both inside and between brain regions, and conform to a single set of the same processing principles, such as distributed processing, lateral inhibition, and recurrent feedback (O'Reilly, 1998).

One critical question is how people pursue distant goals through a parallel distributed processing network—an approach differing from that of some of the dual-mode theories that see the pursuit of distant goals as requiring inherently discrete logical rules in a serial processing system (e.g., Stroop & Deutsch, 2004). As a solution to this problem, recent work in computational neuroscience has investigated how the basal ganglia serve as an "adaptive critic" of the rest of the brain, instantiating a type of learning known as reinforcement learning (e.g., Montague, 1996; Dayan & Sejnowski, 1996). The term reinforcement learning, unfortunately, sounds antiquated, conjuring up Skinner's no longer influential notion that higher-order cognition can be explained by very simple procedures for learning knee-jerk reactions to the environment. However, the label is misleading. Contemporary reinforcement learning accounts are relatively quite sophisticated (see Fukuoku, Halsey, & Ferguson, 2013), and they demonstrate how "merely associa-
tional" response mechanisms can still subserve the complex, strategic pursuit of distant goals. According to this literature, behaviors are driven by an internal critic that tracks different "value" of transitions between various environmental states (or their cortical representations; see Montague et al., 1996). Whenever the person reaches a more highly valued state than expected, the critic sends out an internally manufactured dopaminergic reward signal. Using these dopaminergic reward signals, the "adaptive critic" (located in the basal ganglia) determines the value of being in a particular state. Using these value assessments, the adaptive critic trains the rest of the brain to choose behaviors that subserve a person's strategic goals, even when pursuing the goal requires repeated deliberative processing at multiple junctures deep into the future. What these findings mean, in short, is that the frequently desired notion of stimulus–response associations can be quite literally intelligent. These associations are far more sophisticated than brute force training and can, indeed, the strength of these associations can capture, in a single quantity, complex information about how to maxi-
mize the expected value of an arbitrary number of goals in the distant and the proximal future. In fact, when stimulus–response associations are sculpted by an internal critic, they can guide an agent's performance even in non-ideal situations (e.g., making decisions in a complex maze).
of the term multiple systems or brain regions is inescapable. In addition, computational (e.g., symbolic vs. distributed representations) or a wall of separation between the systems (whereby communication is incomplete), but rather the fact that the nature of the parallel distributed processing inside has important functional differences (neuromodulators, network centrality, etc.). Recent theoretical work on multiple interacting systems (Ferguson & Wojnowicz, 2011) has examined how this "multiple interacting systems" model of executive control could explain the social psychological phenomenon of evaluative readiness (Ferguson, 2008). The primary idea is that the prefrontal cortex serves to dynamically project the high-dimensional dynamics of the posterior cortical system in such a way that it best surmises motivational needs (see Ferguson & Wojnowicz, 2011).

CONCLUSION

We have outlined some criticisms of dual-mode theory, as well as ways to move beyond the criticisms. We now conclude by making two suggestions. The first is that, in our view, the question of rule-based versus associative processing can only be convincingly tested using computational model testing. Computational models consist of assigning computational programs that specify algorithms (e.g., rule-following versus cognitive evaluation). Critically, these computational programs are then runnable and can be tested for how they fit behavioral data. We view computational models as the most informative type of model testing (e.g., Hintzman, 1990; Weitzenfeld, 2008, 2008, because they provide highly specified (both procedurally and conceptually) predictions that can be formally tested and compared with human (or animal) data. Most of the computational work in social psychology over the last few decades has consisted of constructionist models (Read & Monroe, 2008). There is almost no application of symbolic models such as Acting Character of Thought (ACT-R; Anderson, 1993; Anderson & Leth, 1998), or CLARION (Sun, Shafarz, & Terry, 2005), or hybrid models (e.g., Solomon, 1988) to social psychological phenomena. This is possibly a missed opportunity given that the social-cognitive dual-process models strongly postulate rule-based processing (and/or symbolic representations).

Our second suggestion is to advocate for greater testing of the operating characteristics of a process—in other words, the dimensions such as awareness, resources, control, speed, and intention, according to which phenomena emerge (e.g., see Moore & De Houwer, 2006). In our view, such information is valuable, necessary, and informative, and might even be of greater interest to us than the identification of rule-based versus associative processing. In fact, the operating characteristics that are studied most often in the context of dual-mode theories include awareness, intention, control, and effort. The common currency of subjective experience among these characteristics most often studied by social psychologists is undoubtedly no accident, and knowledge about the extent and nature of phenomena that can emerge outside of, or only with, the subjective content or awareness will probably continue to be of interest to us, and to those outside of it (e.g., Ross, Lepper, & Ward, 2010).

REFERENCES


