



Chain liability in multitier supply chains? Responsibility attributions for unsustainable supplier behavior



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ABSTRACT

When it becomes publicly known that products are associated with suppliers that engage in unsustainable behaviors, consumers protest, as Nestlé, Zara, and Kimberly Clark, among others, have learned. The phenomenon by which consumers hold firms responsible for the unsustainable behavior of their upstream partners suggests the notion of “chain liability.” This study aims to generate insights into the antecedents and consequences of such consumer responsibility attributions. Using data from four vignette-based survey experiments, the authors find that the chain liability effect increases if an environmental degradation incident (1) results from supplier behavior rather than *force majeure*, (2) results from a company decision rather than the decision of an individual employee, and (3) is more severe. Responsibility attributions do not differ with varying organizational distance from the supplier, firm size, strategic importance of the supplied product, or the existence of environmental management systems. The chain liability effect also creates strong risks for the focal firm; higher responsibility attributions increase consumers’ anger and propensity to boycott. Therefore, firms should work to ensure sustainable behavior throughout the supply chain, to protect them from chain liability.

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1. Introduction

An accusation posted on Nestlé’s Facebook site in April 2010, “You have destroyed millions of hectares of rainforest. I will no longer buy any Nestlé products,” is representative of hundreds of similar posts by enraged consumers. These protests became especially prominent when public reports revealed that the palm oil contained in many of Nestlé’s products was obtained through unsustainable behaviors: Sinar Mas, one of Nestlé’s suppliers, cut down vast swaths of rainforest to increase the amount of land available for its palm oil production. Consumers held Nestlé responsible, and this case is not unique: Kimberly Clark was scorned when its tissue suppliers harvested historical woodlands, and Zara was blamed when subcontractors used toxic chemicals to dye apparel.

Apparently consumers do not differentiate between members of the supply chain when it comes to unsustainable behavior. Instead, they hold the focal firm responsible for everything that occurs in the supply chain, which creates a “chain liability effect.” Such unsustainable behaviors might entail economic, social, and/or

environmental dimensions (e.g., Elkington, 2004), though for this study, we primarily focus on the environmental dimension, which ultimately affects human well-being (Gao and Bansal, 2013). In this context, unsustainable supplier behavior refers to supplier behaviors that reduce ecological capital and harm the environment (Andersson and Lindroth, 2001); it differs from poor performance or supplier wrongdoing, which instead imply general deviance from basic supply chain management objectives (e.g., cost, quality, service, flexibility). Unsustainable supplier behavior instead increases the risk of unsustainable incidents, either immediately (e.g., contamination of water supply) or after some time (e.g., climate change due to greenhouse gas emissions). For example, Chinese regulations forbid the release of toxic effluents into waterways. These regulations are frequently ignored by suppliers to the clothing (e.g. Zara) and other industries who often secretly release toxic chemicals into water systems (Greenpeace, 2009). These irresponsible acts represent unsustainable behavior. They lead to severe negative consequences for the environment and local inhabitants. One specific pollutant caused the death of 8000 people in four major Chinese cities which constitutes an unsustainable incident (Economy, 2013). That is, we use “incident” to refer to a negative outcome of unsustainable behavior. We further note that many consumers express their willingness to boycott firms associated with an unsustainable incident, with substantial economic risk (Klein and Dawar, 2004; Kovács, 2008).

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Despite such impacts and their relevance, we still lack a clear understanding of the underlying causal inferences by which consumers attribute responsibility for unsustainable supplier behavior to a focal firm (i.e., chain liability). Literature on supply chain sustainability offers important contributions (Carter and Rogers, 2008; Seuring and Mueller, 2008) but also suffers some persistent gaps. For example, supply chain literature mainly focuses on the benefits of sustainability, rather than the threats associated with insufficient efforts (e.g., Carter, 2000; Jayaraman et al., 2005; Melnyk et al., 2003). In investigating supply chain structures, prior research addresses direct supplier relationships, with only marginal attention devoted to multitier supply chains (Kovács, 2008; Mena et al., 2013). Finally, existing studies outline ways to ensure supplier compliance with expectations and standards (Delmas and Montiel, 2009; Jiang, 2009), to encourage suppliers to become more sustainable (Gavronski et al., 2011; Klassen and Vereecke, 2012; Vachon and Klassen, 2008), and to determine the effects of such initiatives on performance (Bai and Sarkis, 2010; Carter and Jennings, 2004; Zhu and Sarkis, 2004), but they ignore the effect of the lack of such activities.

Operations and supply chain literature naturally pays less attention to consumers' perceptions, though some studies include this perspective, focusing on the consequences of responsibility attributions rather than their determinants. We thus find investigations of threats to consumer safety emanating from supplier wrongdoing and their implications (e.g., Hora et al., 2011; Marucheck et al., 2011). Marketing studies also attempt to explicate the determinants of responsibility attribution by noting how a lack of sustainability can be manifest in defective or dangerous products (Gao et al., 2012; Klein and Dawar, 2004; Laufer et al., 2005), rather than in the production process. Despite these valuable contributions, to the best of our knowledge, no investigations include environmental dimensions of sustainability concerns in multitier supply chains, in which consumers' expectations determine their attributions and define their reactions.

Accordingly, this study seeks to make three contributions. First, we aim to determine if consumers hold focal firms responsible for the ecologically unsustainable behavior of their suppliers in upstream, multitier supply chains, or if this effect is anecdotal. With a vignette-based study, we obtain evidence that consumers blame the focal firm for unsustainable supplier behavior and thereby clarify consumers' expectations of environmental standards in a multitier supply chain. Second, we investigate contextual factors that might increase or decrease such responsibility attributions, related to the incident, the relationship with the supplier, and the structure of the supply chain. By considering the relative influences of eight factors, we offer critical insights for supply chain decision makers, who must prioritize and promote targeted actions and engagement. Third, we shed light on consumers' emotional and behavioral reactions to responsibility attributions, to offer insights into the potential market risks associated with an unsustainable

incident. That is, we examine unsustainability in supply chains by acknowledging consumer perceptions and reactions as a starting point for a definition of appropriate supply chain strategies.

In the next section, we introduce attribution theory as our theoretical basis and define the key constructs that lead to our hypothesis development. In Section 3, we describe the research settings, experiments, and data, before presenting the findings in Section 4. We conclude with discussions of our findings and their implications.

2. Theory and hypotheses

2.1. Attribution theory

Attribution theory (AT) views individuals as rational information processors who try to make sense of the world by attributing causes to incidents. Faced with an incident, a person seeks to understand what caused it and determine who is responsible (Fincham and Jaspers, 1980; Hamilton, 1978). According to AT, responsibility attributions vary on several dimensions. The *locus of causality* differentiates situational factors and abilities; *controllability* refers to the degree of volitional control an offender has over the outcome, representing the degree of direct influence on the cause. *Stability* is the degree to which the cause remains constant over time and indicates what to expect from the offender in future, in similar circumstances (Weiner, 1986, 1995). Furthermore, an extension of AT includes incident *severity*, such that people likely attribute more responsibility for more severe incidents (e.g., Tennen and Affleck, 1990). Therefore, consumers should assign more responsibility if a cause of an incident is (a) internal, (b) controllable, (c) stable, and (d) more severe.

Responsibility attributions are inherently tied to emotional and behavioral reactions (Weiner, 1986, 1995). For example, poverty attributions that focus beyond the person (e.g., impoverished due to a natural disaster) tend to induce sympathy as an emotional reaction and assistance as a behavioral reaction. Attributions that address the person's own actions (e.g., gambling) instead likely lead to negative emotions and behavioral reactions (e.g., refusing to help; Weiner, 1986, 1995), as illustrated in Fig. 1.

In operations management literature, AT primarily has served to explicate the social, behavioral, and emotional aspects of operational decision making (Bendoly et al., 2006; Urda and Loch, 2013), including wait perceptions and their consequences (Seawright and Sampson, 2007), the effects of customer interactions on purchasing behaviors in self-service situations (Li et al., 2013), the influence of fairness perceptions on the degree of cooperation for technology entrepreneurship (van Burg and van Oorschot, 2013), and the social, technological, or personal factors that lead to (un)safe work behaviors (Brown et al., 2000; DeJoy, 1994). Eckerd et al. (2013) use AT to understand how breaches of psychological contracts affect work behaviors and attitudinal perceptions, in the context of two supply

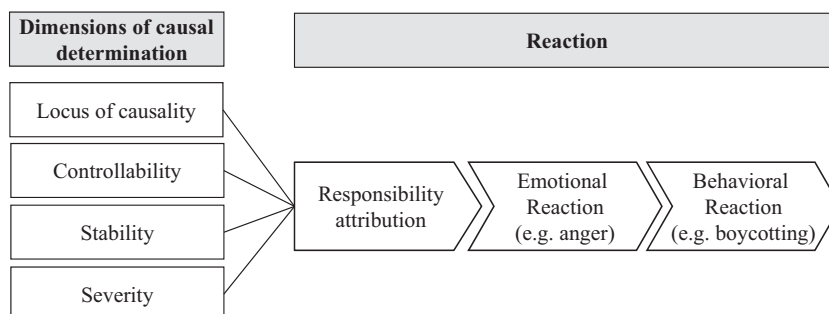


Fig. 1. Attribution process according to Weiner's (1986, 1995) attribution theory.

chain partners. In contrast, most operations management research applies AT at the individual level. With this study, we extend the application of AT to incidents that occur in multitier supply chains, as perceived by individual consumers, to investigate sustainability in supply chains.

Attribution theory also can shed light on consumer perceptions of corporate responsibility. Skarneas and Leonidou (2013) find that attributions of egoistic- and stakeholder-driven motives elicit consumer skepticism; values-driven attributions inhibit such skepticism. In turn, skepticism lowers retailer equity, decreases resistance to negative information about the retailer, and stimulates unfavorable word of mouth. Consumers who instead perceive responsible actions as sincere and in line with the overall company strategy reward companies by choosing their products over competitors' (Becker-Olsen et al., 2006; Ellen et al., 2006; Yoon et al., 2006). Thus, consumers appear to reward sustainable (responsible) firm behavior; we also seek to understand how consumers punish unsustainable behaviors.

In developed economies, consumers push firms to monitor and close gaps in their sustainability performance across supply chains (Klassen and Vereecke, 2012; Parmigiani et al., 2011), holding them responsible for the conditions in which the products they offer were manufactured (Phillips and Caldwell, 2005). Responsibility is strongly conferred when the firm can make independent decisions and control and influence outcomes in the supply chain (New, 2004; Parmigiani et al., 2011). Such authority and ability depend on different factors, as do consumers' responsibility attributions.

2.2. Locus of causality

The locus of causality dimension suggests that if the cause of an incident is a situational factor, an observer will attribute responsibility for its outcome to situational and contextual factors (e.g., nature) rather than specific actors (e.g., the company) (Folkes, 1984; Klein and Dawar, 2004). The cause of the incident is externalized (Gao et al., 2012), and less responsibility accrues to the firm (Weiner, 1986, 1995). *Force majeure* is a case in point: If toxic chemicals get released into the air because of sloppy security systems applied during manufacturing, observers attribute responsibility to the firm. If the cause of this release instead is an earthquake, which damaged the firm's security systems in unforeseeable ways, they likely attribute responsibility to situational factors. That is, an unsustainable incident at a supplier's site caused by situational factors, as opposed to internal ones, leads consumers to assign less responsibility to the focal firm.

H1. Consumers attribute more responsibility to the focal firm for unsustainable supplier behavior when the cause is company failure rather than *force majeure*.

2.3. Controllability

The controllability dimension implies that responsibility attributions increase as controllability intensifies (Weiner, 1986, 1995), which might result from the structure of the supply chain (H2 and H3) or the nature of the relationship between a focal firm and its suppliers (H4 and H5). In terms of supply chain structure, control in supply chains derives from the influence that a firm has over specific problems, decisions, or outcomes (New, 2004). This sphere of control can span several levels in the supply chain. The internal level designates the firm's own operations, under the direct and strong control of managers (Klassen and Vereecke, 2012; Parmigiani et al., 2011). For example, a firm can decide whether to implement an environmental management system (EMS). At other tiers, the focal firm may have comparatively less control; it can formulate and seek to impose expectations about supplier environmental

performance, but it must draw on additional monitoring and collaboration systems to check for compliance (Klassen and Vereecke, 2012). Internal operations are more controllable, so they should lead to higher responsibility attributions.

H2. Consumers attribute more responsibility to the focal firm for unsustainable supplier behavior when the incident occurs at the focal firm's internal manufacturing sites rather than external suppliers' manufacturing sites.

Furthermore, with regard to external supply chain partners, organizational distance—or the number of tiers separating a focal firm and a specific supplier, which defines the length of the supply chain (Awaysheh and Klassen, 2010)—is a critical consideration. Operations management literature connects organizational distance to a supplier's use of socially responsible behaviors. For example, Awaysheh and Klassen (2010) argue that with greater distance, firms face increased complexity and transaction costs when interacting with suppliers, leading them to employ more monitoring and auditing systems to mitigate information and transparency problems. Greater organizational distance also increases suppliers' use of worker safety measures, codes of conduct, and social audits, likely because they have more difficulty obtaining correct and timely information about the manufacturing conditions maintained by more distant, upstream supply chain partners.

For example, tier 1 suppliers have a direct, contractual relationship with the focal firm, so it can include sustainability in its contractual arrangements, engage in continuous decision making (Wu and Pagell, 2011), and undertake joint product development (e.g., Matos and Hall, 2007). The focal firm also can specify certain control mechanisms to enforce compliance with sustainability regulations and expectations (Jiang, 2009). Coordination with tier 2 suppliers is more complex and difficult, because they have no direct contractual relationship. The focal firm might request information about its tier 2 suppliers from its tier 1 supplier, which maintains contractual relationships with both sides. Information about tier 3 suppliers is nearly impossible to obtain. That is, longer supply chains are more complex and difficult to manage (Awaysheh and Klassen, 2010), because transparency diminishes across multiple tiers (Roth et al., 2008). Consumers should acknowledge that a more distant supplier is less controllable, in which case they might attribute less responsibility to the focal firm.

H3. Consumers attribute more responsibility to the focal firm for unsustainable supplier behavior when organizational distance between the focal firm and the supplier is lower.

Controllability also is influenced by variations in the relationship between the focal firm and the unsustainable supplier; we concentrate on two relational factors, namely, *firm size* and *resource criticality*. Larger focal firms have more power to influence supplier behavior, because they have more opportunity to allocate business to suppliers (Awaysheh and Klassen, 2010; Maloni and Benton, 2000). They also are more likely to apply industry norms stringently and extend them idiosyncratically to suppliers (Parmigiani et al., 2011). Furthermore, large firms may be in a better position to provide financial, human, and technological resources to help the supplier improve its environmental performance (Melnyk et al., 2003). Finally, large companies are more prone to scrutiny by consumers and other stakeholders (Parmigiani et al., 2011), such that they seek to transfer some of this pressure upstream. We thus predict that consumers attribute more responsibility to larger firms, because they perceive these firms have more opportunity to control the behavior of their supply chain partners.

H4. Consumers attribute more responsibility to the focal firm for unsustainable supplier behavior when the focal firm is larger.

Firms that rely on outside supplies for important products and services likely develop capabilities to increase their controllability over and the transparency of upstream partners (Roth et al., 2008). These capabilities should increase the firm's understanding of its supplier's manufacturing science, technology, and conditions (Parmigiani et al., 2011). Such capabilities are costly though, so the focal firm is more likely to invest in developing them with strategically relevant supplies, rather than less strategically relevant ones. Buyer–supplier collaboration is most common in focused, long-term, strategic relationships (Lee and Klassen, 2008). Vachon and Klassen (2006) argue that focused collaboration with strategic suppliers encourages the joint improvement of the supply chain's environmental performance. Buying firms do not invest equally in financial, human, or other resources to attain similar levels of transparency and controllability over suppliers for less strategically relevant aspects (e.g., Rao, 2005). From a supply chain perspective, we posit that focal firms have more transparency and control over suppliers that deliver strategically important products and services, and we anticipate that consumers reflect this coherence in their expectations. Thus, the chain liability effect should be lower if the part delivered by an unsustainable supplier is of less importance for creating the end product.

H5. Consumers attribute more responsibility to the focal firm for unsustainable supplier behavior when the strategic importance of the product is greater.

2.4. Stability

We use the stability dimension of AT to predict responsibility attributions according to whether an individual or the company has caused the incident (H6) and whether the company has EMS in place (H7). First, chain liability may be a function of company versus individual failures. If the cause of the incident is the entire firm, rather than an employee within it, that cause appears stable, in that it reflects a common behavior in the company. A perception of greater stability should increase the chain liability effect. However, if the behavior of a single individual is the cause of the unsustainable incident, this behavior represents an exception rather than the rule, is unstable, and should provoke less responsibility attribution to the firm.

H6. Consumers attribute more responsibility to the focal firm for unsustainable supplier behavior when the supplier company, rather than an individual actor within the company, caused the incident.

Second, regardless of supply chain complexity, consumers likely expect the focal firm to account for environmental conditions upstream during its purchasing decisions (Gao et al., 2012). With EMS, firms implement financial, human, technological, and organizational resources and routines to improve their environmental performance, either internally (Gavronski et al., 2011) or externally (Foerstl et al., 2010; Reuter et al., 2010). A firm with a sophisticated EMS is in a better position to transfer similar routines to suppliers, such as by auditing and assessing the supplier's environmental performance (Reuter et al., 2010) or supporting its efforts to gain environmental certification (Zhu et al., 2012). Such activities signal that the firm cares for the preservation of the natural environment and seeks to ensure sustainability across its entire supply chain; if it suffers an unsustainable incident, consumers thus might interpret the event as misfortune or bad luck (i.e., unstable). If the focal firm instead has no EMS, it demonstrates no effort to prevent environmental damage, so an unsustainable incident that occurs at a supply chain partner's site does not appear unique. Instead, consumers likely believe that the probability of a similar incident in

the future is high (i.e., stable), so they assign more responsibility to the focal firm.

H7. Consumers attribute more responsibility to the focal firm for unsustainable supplier behavior when it has no environmental management system in place.

2.5. Severity

Finally, severity refers to the extent of damage caused, which may range from minor air emissions to vast oil spills (Zyglidopoulos, 2001). Toxic emissions put people's health at risk and seem more severe than overly high water usage, for example. The perceived severity of a negative incident is important for determining responsibility attributions, because a severe incident tends to be more vivid and salient, causing greater rumination, whereas less severe incidents are easier to forgive (Crossley, 2009; McCullough et al., 1997). Phares and Wilson (1972) use an experimental study to show that responsibility attributions significantly increase with the severity of the outcome in car accidents. Kouabenan et al. (2001) find empirical evidence that people assign more responsibility to supervisors for work-related accidents with more severe consequences. Operations management literature addresses incidents with negative product attributes that ultimately lead to product recalls (e.g., Hora et al., 2011; Maruchek et al., 2011), such as the use of lead paint in Mattel toys (Tang, 2008). Similarly, the chain liability effect should be stronger for more severe outcomes of unsustainable supplier behavior.

H8. Consumers attribute more responsibility to the focal firm for unsustainable supplier behavior when the outcomes of this behavior are more severe.

2.6. Consequences of responsibility attribution

Operations and supply chain management literature emphasizes the notions of operational or supply chain risk (Sodhi et al., 2012), with the recognition that globalization, concentration on core competencies, and outsourcing to specialized suppliers can expand strategic opportunities but also increase the probability of adverse incidents in the supply chain (Hora and Klassen, 2013; Narasimhan and Talluri, 2009). Unsustainable supplier behavior is one such adverse incident, and multiple stakeholder groups could hold the focal firm accountable (Parmigiani et al., 2011). Firms caught up in scandals risk consumer boycotts that can result in financial losses (Fombrun et al., 2000; Zadek, 2004).

To date, operations management literature has paid relatively limited attention to this type of risk, which stems from consumers' perceptions of unsustainable supplier behavior. Yet negative incidents have greater impacts than positive ones (Sen and Battacharya, 2001). Research in marketing has shown that individual reactions to negative incidents are both emotional and behavioral in nature, such that consumers express anger toward an organization they hold accountable (Bell et al., 1994; Struthers et al., 2004, 2005; Taylor, 1994). Emotions lead to coping behaviors (Bagozzi et al., 1999), including boycotting (Rowley and Moldoveanu, 2003). Thus, environmental and social issues can influence purchase decisions (Klein et al., 2004).

According to AT, responsibility assignments influence both emotional and behavioral reactions (Weiner, 1986, 1995). The more responsibility assigned for an incident, the stronger the resulting emotional and behavioral reactions (Fincham and Jaspers, 1980; Shaver, 1985). With this research, we seek to understand the consequences of a negative incident (unsustainable supplier behavior) and concentrate on negative emotional and behavioral reactions that likely follow from such an incident. Anger is a common emotional outcome of responsibility attributions for a negative incident

Table 1
Links between theory, constructs, hypothesis and experiments.

Attribution theory dimension	Manipulated constructs	Hypothesis	Experiment
Locus of causality	<i>Force majeure</i> vs. company failure	H1	Klebfix
Controllability	Internal vs. external supplier (structure of the supply chain)	H2	Visuallife
	Organizational distance (structure of the supply chain)	H3	Dressup
	Firm size (type of relationship)	H4	Klebfix
	Product importance (type of relationship)	H5	Fastcar
Stability	Company vs. individual	H6	Fastcar
	Environmental management system	H7	Visuallife
Severity	Degree of severity (toxicity)	H8	Visuallife
Emotional reaction	Anger	H9	All
Behavioral reaction	Boycotting	H10	All

(Weiner, 1986, 1995). For example, when consumers attribute responsibility for service delays to the service provider and not an external cause, they feel more anger toward the service provider (Taylor, 1994). In organizational behavior literature, higher responsibility attributions for irresponsible firm behavior are associated with more anger perceived by employees (Struthers et al., 2004, 2005). It thus seems likely that

H9. Higher responsibility attributions to the focal firm for unsustainable supplier behavior lead to higher levels of anger among consumers.

In line with prior literature, we expect emotion to amplify corresponding behavioral reactions; the connection between emotions and behavior is often higher than that between attitudes and behavior (Bagozzi et al., 1999). If more responsibility results in more negative feelings of anger, the likelihood of negative behavioral reactions also increases. Consumer research confirms a link between negative feelings and boycotting; for example, Klein et al. (2004) find that negative emotions offer a powerful predictor of boycott participation. However, boycott participation depends on other related factors, such as the costs of participation and whether consumers perceive that their boycotting behavior makes a difference (Klein et al., 2004). Furthermore, consumers who participate in boycotts mainly are motivated by a desire to vent their anger and punish the firm (Braunsberger and Buckler, 2011). Therefore, we predict a positive impact of emotional (anger) on behavioral (boycotts) reactions, in response to responsibility attributions.

H10. Higher levels of anger perceived by consumers lead to more boycotting behavior among consumers.

3. Methods

To test these hypotheses, we used four vignette-based experiments with three samples, employing survey methods (Field and Hole, 2003). Different vignettes described a buying firm engaged in a supply chain interaction with one or more supplying firms. Each vignette reported an incident of environmental pollution at one of the supplying firms' sites, resulting from its unsustainable behavior. After reading the vignettes, participants responded to a series of survey items. Table 1 summarizes the AT dimensions, constructs, hypotheses, and corresponding experiments.

3.1. Development and pretesting of vignettes

The vignettes were carefully constructed to manipulate the variables of interest: *Force majeure* versus company failure (H1) was manipulated as a technical error, resulting from a lightning stroke or an error in technical modulation. In the firm internal versus supplier external manufacturing site distinction (H2), the environmental incident occurred either at a firm site or one of the

firm's suppliers' sites. The organizational distance (H3) manipulation used a supply chain with one, two, or three tiers. Focal firm size (H4) was manipulated as either a small firm with 70 employees or a large firm with 15,200 employees. A supplier delivering a strategic part (H5) delivered material for seats in an automotive vehicle; a supplier with a less strategic part offered leather for a decorative strip. For the supplier as an institutional versus individual actor (H6), we indicated that either the company or an employee used toxic materials in manufacturing processes. Environmental management systems (H7) were described according to firm attributes, such as environmental values and award-winning EMS as opposed to problems in environmental management, resulting in repeated fines. Incident severity (H8) was either comparatively low (dissipation of water) or high (wrong treatment of waste, resulting in human injury). In total, we created four vignettes, designated by hypothetical names: Klebfix (2 × 2), Dressup (3), Fastcar (2 × 2), and Visuallife (2 × 2 × 2), as we detail in Table 2.

Wason et al. (2002) recommend assessing and adjusting vignettes for internal consistency and plausibility. Therefore, we pretested them with several student samples to ensure that the manipulations worked as intended, participants understood the scenarios, and respondents believed the scenarios to be consistent. Students were randomly assigned to a vignette and asked to respond to the manipulation check items. For example, in the manipulation check for organizational distance, students indicated the number of organizations involved in the supply chain (two, three, or four). The first pretest confirmed that most of the manipulations worked, as evidenced by the significant differences in responses to the manipulation checks. However, two initial vignettes (organizational distance and *force majeure* versus company failure) showed no significant differences, so we modified them and subjected them to a second pretest; this time, significant differences arose for the manipulation checks.

In the pretest, students also rated the degree of realism (1 = "not at all realistic" to 5 = "very realistic") of three of the four vignettes. The means for this item ranged between 3.6 and 3.8, suggesting that the vignettes appeared realistic. Finally, to increase the validity of the vignettes, we obtained feedback from three researchers with substantial expertise in experimental research. Their suggestions helped us refine the wording of some vignettes.

3.2. Participants

After the pretests, we contracted with a German-based panel provider to collect data from three different, independent samples, each representative of the German population. The first sample, with 250 participants, considered the Klebfix vignette. A second sample, with 284 participants, read both the DressUp and the Fastcar vignettes. To build internal validity and control for any sequence effects, participants completed a distractor task between

Table 2
Description of the vignettes.

Vignette 1 “Klebfix” (2 × 2, between-subjects manipulation)			
<i>No general introduction; four possible experimental manipulations: aa, ab, ba, bb</i>			
<i>Controllability: Focal firm size (H4)</i>	<i>aa. Small focal firm</i> Klebfix is a small company with 70 employees. Klebfix produces adhesives and therefore buys different chemicals. One of the chemical suppliers is Fine Chemicals.		<i>ab. Large focal firm</i> Klebfix is a large company with 15,200 employees. Klebfix produces adhesives and therefore buys different chemicals. One of the chemical suppliers is Fine Chemicals.
<i>Locus of causality: Force majeure vs. company failure (H1)</i>	<i>ba. Force majeure</i> Recently, it has become publicly known that an accident at Fine Chemicals caused acid waste water to leak into the groundwater. This accident was caused by <i>force majeure</i> : An engine had exploded due to a severe lightning strike that hit the facility and its electric systems.		<i>bb. Company failure</i> Recently, it has become publicly known that an accident at Fine Chemicals caused acid waste water to leak into the groundwater. This accident was caused by <i>company failure</i> : An engine had exploded due to an inaccurate system setting.
Vignette 2 “Dressup” (3-level, between-subjects manipulation)			
<i>General introduction (identical across Vignette 2 scenarios)</i>			
	Environmental Scandal in Asia! A production site of the company Super Dye located on the shores of a lake in Asia, which dyes textiles with toxic devices, inappropriately disposed of its effluents, causing the contamination of the lake. All the plants and animals in the lake were killed off; it will take decades for the lake to recover. Among other purposes, dyed textiles from Super Dye are used for jeans production for the label Dressup. Dressup is an upcoming German fashion label, and the company's success is based on the sales of particularly well-fitting, fashionable jeans. Every season, Dressup develops new designs and colours for jeans, which are then produced by different suppliers.		
<i>Controllability: Organizational distance (H3)</i>	<i>a. Two-tier supply chain</i> Therefore, Dressup assigns various producers to dye and sew its jeans. The aforementioned Super Dye, which discharged toxic effluents into the lake, happened to be one of these producers. Thus, Dressup has a direct contractual relationship with Super Dye. In total there are two companies involved in this process: Dressup and Super Dye.	<i>b. Three-tier supply chain</i> Therefore, Dressup authorizes the intermediary Fashion Retail to search for appropriate suppliers. Fashion Retail assigns various producers to dye and sew the jeans. The aforementioned Super Dye, which discharged toxic effluents into the sea, happened to be one of these producers. Thus, Dressup has no direct supply chain relationship with Super Dye. In total there are three companies involved in this process: Dressup, Fashion Retail, and Super Dye.	<i>c. Four-tier supply chain</i> Therefore, Dressup authorizes the intermediary Fashion Retail to search for appropriate suppliers. Fashion Retail assigns various producers to dye and sew the jeans. In the name of Dressup, Fashion retail assigned the producer Bluejeans to sew the jeans. Bluejeans in turn bought dyed textiles from suppliers, including the aforementioned Super Dye, which discharged toxic effluents into the sea. Dressup has no direct contractual relationship with Super Dye. In total there are four companies involved in this process: Dressup, Fashion Retail, Bluejeans, and Super Dye.
Vignette 3 “Fastcar” (2 × 2 between-subjects manipulation)			
<i>General introduction (identical across Vignette 3 scenarios)</i>			
	Fastcar produces automotive vehicles and buys, among other products, leather for vehicle manufacturing.		
<i>Controllability: Product importance (H5)</i>	<i>aa. High product importance for end product</i> Leather is used for the seats inside the cars. The leather is therefore much more important than components bought from other suppliers.		<i>ab. Low product importance for end product</i> Leather is used for a decorative strip inside the cars. The leather is therefore much less important than components bought from other suppliers.
<i>Stability: company vs. individual (H6)</i>	<i>ba. Company</i> The company Luxury Leather supplies Fastcar with leather. Recently, it became publicly known that Luxury Leather used chromic acids for leather tanning. Chromic acid is highly toxic and carcinogenic and is therefore forbidden.		<i>bb. Individual</i> The company Luxury Leather supplies Fastcar with leather. Recently, it became publicly known that the department head of the tanning department of Luxury Leather used chromic acids for leather tanning. Chromic acid is highly toxic and carcinogenic and is therefore forbidden.

Table 2 (Continued)

Vignette 4 “Visuallife” (2 × 2 × 2 between-subjects manipulation)		
General introduction (identical across all Vignette 4 scenarios) Stability: Environmental Mgt. System (H7)	Visuallife is a company that produces monitors and displays for televisions, laptops, and mobile phones aa. EMS Visuallife is strongly engaged in environmental preservation. Since its inception, the company had built up a comprehensive environmental management system and received several awards for it.	ab. Lack of EMS In the past, Visuallife frequently had problems with environmental regulations that it did not comply with. Because of this, Visuallife had to pay penalties on several occasions.
Controllability: Internal versus external (H2)	ba. Focal firm internal manufacturing For economic reasons Visuallife moved the production of monitors to Taiwan a couple of months ago. Therefore, the company built its own facility in Taiwan.	bb. Focal firm external manufacturing For economic reasons Visuallife moved the production of monitors to a supplier in Taiwan a couple of months ago. It no longer produces monitors at its own sites.
Severity: Incident severity (H8)	ca. High severity Recently, it has become publicly known that toxic wastes were not discharged appropriately at the supplier’s facility in Taiwan. Employees who came in contact with the toxic materials suffered severe injuries that will impair their health for the rest of their lives.	cb. Low severity Recently, it has become publicly known that water was used irresponsibly in the production facility in Taiwan. Every day, on average approximately 1000 L more water are used for the cooling machines than at a comparable facility in Germany.

the two vignettes (Field and Hole, 2003). Finally, the Visuallife sample included 623 participants. In all cases, participants received a small financial reward (3 Euros) for participating in the study from the panel provider. We report the distribution of the participants by gender, age, and educational background in Table 3.

3.3. Measures

After reading a scenario, participants responded to a series of questions to measure their responsibility attributions, anger, and boycotting intentions. All constructs in this questionnaire were measured with existing, seven-point Likert scales (1 = “not at all,” 7 = “entirely”), as we show in Appendix 1. As presented in Table 4, responsibility attribution was measured with three items from Struthers et al. (2005), such that participants rated the extent to which they thought the focal firm was “responsible” and acted “carelessly” or “thoughtlessly.” Three items appeared in the anger measure (Crossley, 2009). Participants indicated the probability that customers of the focal firm would feel “angry,” “hostile,” and “offended.” We measured boycotting with three items from Fragale et al. (2009) and Struthers et al. (2005). Specifically, we asked participants how likely consumers would be to “harm [the focal firm],” “do something to make [the focal firm] pay,” or “boycott [the focal

firm].” Composite reliability values ranged between .743 and .954, all above the recommended threshold of .7 (Bagozzi and Yi, 1988). The average variances extracted also were above the recommended value of .5, in support of scale consistency (Bagozzi and Yi, 1988).

We next analyzed the items using a confirmatory factor analysis (CFA) in Mplus to assess the scale reliability and validity of the overall measurement scheme (Hair et al., 2006). The data were slightly positively skewed, so we used a maximum likelihood (MLM) estimator, which is more robust for non-normally distributed data. As Table 4 shows, the model fit was acceptable for most models but only mediocre for Dressup, for which the root mean square error of approximation (RMSEA) fell just below the recommended rejection value of .1 (Brown, 2006). Yet the confirmatory fit index (CFI) and Tucker–Lewis index (TLI) values indicated acceptable fit for all the models (Brown, 2006). Across these fit indices for all four models, the CFA results supported the validity and reliability of our measurement instrument.

As in the pretest, participants answered manipulation checks items to verify that they perceived the experimental manipulations as intended (Field and Hole, 2003). For the Visuallife vignettes, participants responded to these items at the end of the questionnaire. Regarding the internal versus external supplier site manipulation, participants indicated whether they believed the incident

Table 3
Sample characteristics.

	Klebfix	Dressup/Fastcar	Visuallife
Gender			
Female	53.2%	49.3%	50.4%
Age			
18–24	14.8%	14.8%	11.7%
25–34	16.4%	19.4%	18.1%
35–44	23.6%	25.4%	22.2%
45–54	25.2%	21.1%	27.0%
55–65	20.0%	19.0%	21.0%
Education			
Certificate of secondary education (9 years)	31.6%	24.6%	26.6%
Certificate of secondary education (10 years)	40.4%	40.8%	39.3%
University entrance certificate	12.4%	14.4%	16.2%
Post graduate certificate	15.6%	20.1%	17.8%
Sample size	250	284	623

Table 4
Confirmatory factor analysis results.

Item/construct	Klebfix	Dressup	Fastcar	Visuallife
Responsibility attribution				
Responsible (loading)	.778*	.580*	.702*	.426*
Careless (loading)	.945*	.833*	.921*	.819*
Thoughtless (loading)	.856*	.911*	.931*	.821*
CR	.896	.826	.892	.743
AVE	.866	.752	.860	.613
α	.882	.805	.871	.717
Anger				
Angry (loading)	.891*	.891*	.890*	.913*
Hostile (loading)	.946*	.965*	.950*	.941*
Offended (loading)	.964*	.889*	.961*	.931*
CR	.954	.940	.954	.949
AVE	.947	.929	.947	.942
α	.953	.943	.954	.950
Boycotting				
Harm (loading)	.698*	.801*	.771*	.776*
Make pay (loading)	.746*	.824*	.834*	.803*
Boycott (loading)	.814*	.560*	.663*	.795*
CR	.797	.778	.802	.834
AVE	.692	.662	.702	.759
α	.792	.739	.774	.833
Goodness of fit				
RMSEA	.075	.094	.086	.067
CFI	.975	.954	.961	.977
TLI	.962	.931	.941	.966
SRMR	.047	.092	.082	.038

Notes: $n_{(Klebfix)} = 250$; $n_{(DressUp)} = 284$; $n_{(FastCar)} = 284$; $n_{(VisualLife)} = 623$. The confirmatory factor analyses used a MLM estimator. CR = construct reliability. AVE = average variance extracted. α = Cronbach's alpha. RMSEA = root mean square error of approximation. CFI = confirmatory fit index. TLI = Tucker–Lewis index. SRMR = standardized root mean residual.

* $p < .001$.

happened at the focal firm's own manufacturing site, using a seven-point scale (1 = "applies not at all," 7 = "applies entirely"). Their responses were significantly lower for the vignettes that described an incident happening at a supplier's site than for those in which the incident was described as having happened at a manufacturing site owned by the focal firm ($M_{focal\ firm} = 4.28$; $M_{supplier} = 3.20$, $p = .002$). Similarly, respondents' EMS perceptions were significantly different across conditions ($M_{high} = 3.25$; $M_{low} = 2.89$, $p = .003$), as were their perceptions of incident severity ($M_{high} = 5.84$; $M_{low} = 5.15$, $p = .000$). For the other three vignettes (Klebfix, Dressup, and Fastcar), we applied the manipulation checks as filter questions and specified thresholds for "correct" answers. For example, for the firm size manipulation, participants first read the scenario and then indicated, on a five-point scale, the firm's size (1 = "very small," 5 = "very large"). Correct answers ranged from 1 to 3 for the small manipulation (70 employees) and 3 to 5 for the large manipulation (15,200 employees). A respondent providing an incorrect answer was asked to read the vignette again and respond to the same question. If the response was repeatedly incorrect, the participant was thanked and excluded from completing the rest of the questionnaire.

Because research that deals with sensitive topics, such as stated reactions to unsustainable firm behavior, may be susceptible to social desirability bias (Podsakoff et al., 2003), we implemented two procedures. First, we used indirect references to the opinions of a third person, such that the items referred to (other) customers becoming angry or boycotting, not the respondent him- or herself. This procedure, according to Fisher (1993), reduces social desirability bias in surveys. Second, to check for potential social desirability, we included two items from the Crowne and Marlowe (1960) social desirability scale.

As control measures, participants provided information about their age, highest level of education, and gender. They also indicated how important the preservation of the natural environment was for them. This item came from the Schwartz Value Scale (Schwartz and Bilsky, 1990), measured on a seven-point Likert scale.

Finally, our reliance on self-reported data from single informants introduced the potential for common method bias; we employed several techniques to control for it. First, we used established scales for all constructs (MacKenzie and Podsakoff, 2012). Second, we guaranteed respondents' anonymity. Third, we conducted Harman's single-factor test (Podsakoff et al., 2003), to determine if a single latent factor accounted better for all manifest items than our theoretically specified, multifactor measurement model. The chi-square difference test, using Satorra–Bentler's MLM mean-adjusted estimator (Muthén and Muthén, 2013), revealed significantly better model fit for the multifactor model. Thus, common method bias did not appear to be a major problem.

4. Results

We tested our hypotheses using structural equation modeling with a robust maximum likelihood MLM estimator (Byrne, 2012; Muthén and Muthén, 2010). We calculated four structural equation models, one for each experiment, using the experimental manipulations as independent variables. The results appear in Table 5.

Considering the size of the samples and the number of observed variables, we regard the model fit as acceptable: RMSEA values were .065 (Dressup, Fastcar) or lower (Steiger, 2007); the CFI and TLI were greater than .95; and the standardized root mean residual was below .08 (Hair et al., 2006).

Regarding our locus of causality hypothesis, chain liability should be lower if the cause of the unsustainable incident is perceived as *force majeure* (external situational factors) rather than a failure by the vendor (internal at focal firm). The experimental manipulation was coded as dummy variable (0 = *force majeure*, 1 = supplier failure). In support of H1, the structural path was highly significant ($SE = .405$, $p = .000$), and consumers would attribute significantly more responsibility to the focal firm if the cause of the incident was under the control of the supplier, as opposed to *force majeure*.

Table 5
Structural equation modeling results.

	Klebfix SE (p-value)	Dressup SE (p-value)	Fastcar SE (p-value)	Visuallife SE (p-value)
Experimental manipulations (antecedents)				
<i>Locus of control</i>				
H1: Force majeure vs. supplier failure	.405 (.000)			
<i>Controllability (structure)</i>				
H2: Focal firm (internal) vs. supply chain (external)				.007 (.868)
H3: Organizational distance		-.027 (.662)		
<i>Controllability (relation between buyer and supplier)</i>				
H4: Focal firm size	.057 (.333)			
H5: Importance of supplied part			-.032 (.591)	
<i>Stability</i>				
H6: Company act vs. individual act			.128 (.031)	
H7: Focal firm EMS				-.057 (.180)
<i>Severity</i>				
H8: Degree of incident severity				.138 (.001)
Structural paths (consequences)				
H9: Responsibility attribution → anger	.575 (.000)	.508 (.000)	.482 (.000)	.519 (.000)
H10: Anger → boycotting	.416 (.000)	.339 (.000)	.395 (.000)	.738 (.000)
Responsibility attribution → boycotting	.237 (.005)	.113 (.229)	.274 (.000)	-.072 (.119)
Social desirability → responsibility attribution	-.003 (.973)	.030 (.632)	-.048 (.581)	-.063 (.172)
Social desirability → anger	.027 (.728)	-.044 (.366)	-.029 (.699)	-.004 (.915)
Social desirability → boycotting	.171 (.084)	.147 (.007)	.158 (.051)	-.057 (.099)
Environmental values → responsibility attribution	.009 (.881)	.217 (.002)	.272 (.000)	.214 (.000)
Environmental values → anger	.003 (.953)	.186 (.000)	.143 (.006)	.088 (.013)
Environmental values → boycotting	-.032 (.559)	.142 (.032)	.056 (.303)	.073 (.048)
Goodness of fit				
Root mean square error of approximation (RMSEA)	.063	.065	.065	.049
Confirmatory fit index (CFI)	.960	.953	.954	.967
Tucker–Lewis index (TLI)	.947	.937	.938	.957
Standardized root mean residual (SRMR)	.050	.073	.067	.047

Notes: $n_{(Klebfix)} = 250$; $n_{(DressUp)} = 284$; $n_{(FastCar)} = 284$; $n_{(VisualLife)} = 623$. The structural equation modeling used the MLM estimator.

Several of our hypotheses reflect the controllability dimension of AT. We did not find support for H2, which suggested that focal firms would be held more responsible for incidents happening on their own manufacturing sites, because the structural path was not significant ($SE = .007$, $p = .868$). Similarly, the role of organizational distance (H3) was not confirmed ($SE = -.027$, $p = .662$), in that consumers did not differentiate unsustainable behavior by an immediate as opposed to an indirect supplier. These two findings actually support our notion of chain liability, because the focal firm appears to be held responsible for unsustainable incidents, regardless of where they occur in the supply chain. Neither focal firm size (H4, $SE = .057$, $p = .333$) nor the importance of the supplied part for the end product (H5, $SE = -.032$, $p = .591$) significantly affected responsibility attributions to the focal firm either. These results suggest that smaller firms are no less prone to responsibility attributions than large firms, though in reality, smaller firms may be less likely to be the targets of media reports, such that their unsustainable supplier behavior may go unnoticed. The findings also suggest that companies do not find relief from chain liability if unsustainable supplier behaviors refer to comparably unimportant elements.

In support of H6 ($SE = .128$, $p = .031$), the focal firm received more blame when the cause of the incident was the company rather than an individual actor. In accordance with the stability dimension of AT, we predicted that focal firms with successful EMS would be less susceptible to the chain liability effect, but H7 did not receive support ($SE = -.057$, $p = .180$). In terms of incident severity and consistent with H8, we found a significant effect on responsibility attributions ($SE = .138$, $p = .001$); unsustainable supplier behavior that immediately and directly affected human health was perceived as more severe. However, consumers attributed less responsibility if the consequences of the environmental pollution were long term, uncertain, or blurry.

Finally, we predicted some consequences of these responsibility attributions. Across all four structural equation models, we

found significant, strong effects of responsibility attributions on feelings of anger (H9), with SE values between .482 (Fastcar) and .575 (Klebfix). All paths from anger to boycotting behavior (H10) were significant, ranging between .339 (Dressup) and .738 (Visuallife). To substantiate our findings based on Likert scales, we also measured future buying behavior with a dichotomous scale. In the selected experiments, approximately three-quarters of the participants indicated that they would not buy a product from the focal firm again. This result specifies the risk associated with chain liability.

In all four models, we also included a direct path from responsibility attribution to boycotting, to test whether anger mediates the relationship between these constructs (Zhao et al., 2010) as proposed by AT. In two of the four models, the direct effect was significant (Klebfix $SE = .237$, $p = .005$; Fastcar $SE = .274$, $p = .000$), indicating partial mediation. This result suggests an extension to AT, as we discuss subsequently. Fig. 2 provides a graphical summary of the results from the four experiments.

The structural equation models also included paths from the control variables for social desirability (Podsakoff et al., 2003) and environmental values to responsibility attribution, anger and boycotting. Social desirability did not affect the dependent variables except for boycotting in the Dressup experiment. This means that the inclusion of social desirability provided an effective control from a potential contamination by social desirability. Environmental values affected responsibility attribution, anger and boycotting behavior to some extent. In all except the *force majeure* manipulation, respondents for whom the preservation of the natural environment was more important attributed more responsibility, perceived more anger and reported more boycotting behavior. In the *force majeure* case the path was understandably insignificant; because from a consumer perspective, an act of nature appears beyond the control of a company (Kalamas et al., 2014). When a company was involved in causing the unsustainable incident (all other manipulations) it is reasonable that people with more

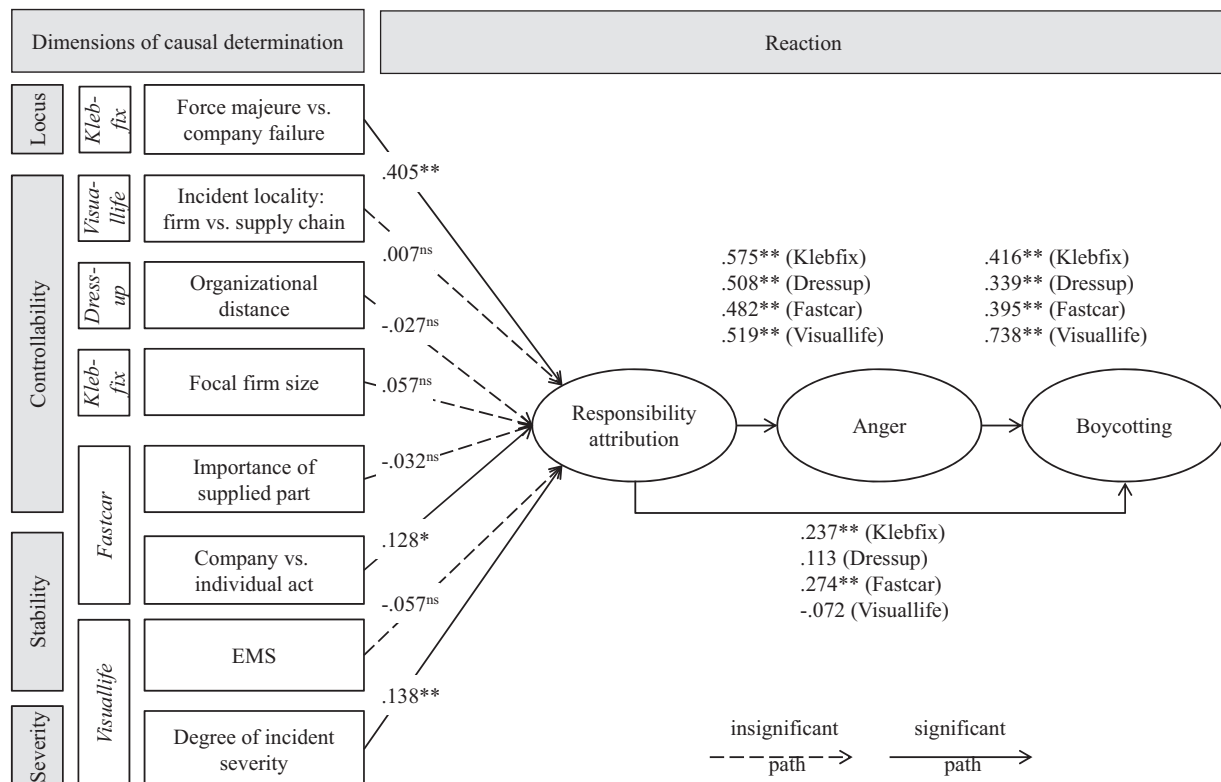


Fig. 2. Results of structural equation modelling.

environmental values attributed more responsibility and felt more anger, because they care more for the environment. Environmental values also seemed to affect boycotting behaviors, which is not a surprising finding; people who prioritize environmental issues should be more likely to take action against polluters. Marketing literature even warns that consumers who care about the natural environment are more likely to boycott firms that disrespect their concerns (Chan et al., 2012; Friedman, 1985; Klein et al., 2004).

5. Discussion and implications

5.1. Discussion

Our findings support the existence of a chain liability effect in multitier supply chains: A focal firm may be held responsible for not only its own but also its suppliers' unsustainable behaviors. Although an incident resulting from *force majeure* decreases consumers' responsibility attributions (H1), none of our hypotheses related to the controllability dimension of AT led to significantly lower responsibility attributions (H2–H5). Thus, we show that chain liability persists, even if the unsustainable behavior or incident occurs outside the focal firm (H2), at an organizationally distant supplier (H3), at a large or small firm (H4), or in relation to more or less important supplied parts (H5). We offer two possible explanations for these findings. First, consumers might not fully comprehend the difficulties of managing international, multitier supply chains. To decrease chain liability, focal firms might consider informing consumers about the (limited) possibilities for establishing transparency and control over complex chains. Alternatively, the marketing literature suggests a more nuanced explanation: Gao et al. (2012) argue that consumers facing crises that affect multiple companies adopt habitual and convenient attitudes and behaviors, despite knowing that the problem requires far-reaching, complex solutions. The search for a “scapegoat” offers a simple,

convenient coping mechanism. Similarly, in the case of product harm crises, negative spillover effects spread throughout the product family (Roehm and Tybout, 2006), which might also apply to “chain families.” Consumers might recognize the difficulties of ensuring sustainable supplier behavior throughout the chain but still find it more convenient to blame a focal firm.

A third set of our hypotheses related to the stability of an unsustainable incident. Although we predicted more stability perceptions when the incident was due to company behaviors (H6) and no EMS existed (H7), we found that consumers acknowledge only that employee behavior can never be entirely regulated by the employer, so they attribute less responsibility for an incident caused by an employee. They do not really consider the firm's effort to develop an EMS. Perhaps companies that engage in sustainable supply chain management create expectations that no incidents will occur, because otherwise their activities represent “greenwashing” (Kim and Lyon, 2011). Responsibility attributions by consumers thus reflect factors over which a focal firm effectively has little control or influence (New, 2004; Parmigiani et al., 2011).

These findings are critical; ultimately, consumer buying behavior determines the harm to companies. The more the focal firm is held responsible for unsustainable behavior in the supply chain, the more likely consumers are to react with negative emotions (H9) and behavior (H10). Thus, our findings lend empirical support to Frooman's (1999) stakeholder influence model. If a stakeholder—the consumer in our study—lacks any opportunity to influence an organization directly, it must apply an indirect influence strategy. Thus a consumer might seek to influence the focal firm, which has influence over the target unsustainable organization, to force it to act sustainably. If consumers withhold their money from the focal firm, they may be trying to force it to ensure sustainability throughout its supply chain.

Another result also is worth discussing. Emotions do not always mediate the relationship between responsibility

attributions and behavioral reactions, in contrast with the AT, which posits that responsibility attributions lead to negative emotions (anger), which then produce behavioral reactions (boycotting). However, in two of our four experiments (Table 5), responsibility attributions directly affected boycotting; emotions were full mediators for jeans (Dressup) and screens/displays (Visuallife) but complementary mediators for adhesives (Klebfix) and cars (Fastcar). This theoretically interesting result might imply the substitutability or low importance of the latter two products. If alternative products offer good substitutes (cars) or the product is unimportant (adhesives), a consumer might boycott after an unsustainable incident, without developing negative emotions. Behavioral changes without preceding emotions are rational only if the perceived effort of changing products or providers, due to a boycott, is low.

5.2. Theoretical implications

Research on sustainable supply chain management mostly focuses on the benefits for focal firms, in terms of increased environmental, social, or economic performance (Bai and Sarkis, 2010; Carter and Jennings, 2004; Zhu and Sarkis, 2004). Far less attention has addressed the valuation of a lack of sustainability (Ager et al., 2008, 2010), even though negative incidents have greater impacts than positive ones (Sen and Battacharya, 2001). With this research, we specifically address the consequences that arise for focal firms as a result of unsustainable supplier behavior and demonstrate that this domain deserves equal attention.

Research should acknowledge that the nature of such negative incidents varies in terms of locality and affected entity. In operations management research, negative incidents normally appear under the umbrella topic of product harm crises (Dawar and Pillutla, 2000). Maruchek et al. (2011) argue that major product defects often result from upstream actions in global production chains. Furthermore, consumers do not boycott only when their own health and well-being is affected; they also do so because manufacturing processes induce negative effects elsewhere. Thus, multitier supply chains must offer product traceability, product lifecycle analysis, and recall management.

Operations management literature generally acknowledges external stakeholder pressures as drivers of sustainability initiatives, directed toward the upstream value chain. We enrich this stream by providing more fine-grained analyses of consumer perspectives on unsustainable incidents in supply chains. Focal firms suffer exposures to the chain liability effect, even if an incident takes place at the site of a distant, upstream supplier. Alwaysheh and Klassen (2010) argue that as distance increases, firms face more complexity and transaction costs in their interactions with suppliers, leading them to employ more monitoring and auditing systems to mitigate information and transparency problems. We note the importance of expanding such efforts beyond tier 1 suppliers, but monitoring systems directed at risk mitigation constitute just a first step in meeting high consumer expectations (Klassen and Vereecke, 2012). A logical second step is enforcing changes in supplier behavior or improved supplier environmental performance. Only to the extent that monitoring leads to supplier behavior correction can it protect a focal firm from chain liability.

Finally, this research contributes to AT literature; we extend its application to the interface between an individual consumer and a network of organizations in multitier supply chains. Attribution theory previously has been used mainly to explain the causal inferences of a consumer about another person (e.g., Crossley, 2009; Fragale et al., 2009) or organization (e.g., Taylor, 1994). Although derived logically from AT, our manipulations, particularly those associated with the controllability dimension, were not confirmed. In an interorganizational context, the controllability

dimension appears too complex for individual consumers to realize. In addition, AT suggests that emotional reactions fully mediate the relationship between responsibility attributions and behavioral reactions, but we find several instances in which emotional reactions only partially mediate this link. The direct path from responsibility attributions to behavioral reactions therefore should be considered and investigated in applications of this theory.

5.3. Managerial implications

In the case of an unsustainable incident in the supply chain, the market will punish the focal firm for its suppliers' behavior. Approximately 75% of our respondents indicated they would not buy from the focal firm after having learned about an unsustainable incident in its supply chain. Thus, we provide further evidence of the important role that customers, as stakeholders, serve in determining the adoption of sustainable strategies (Hillman and Keim, 2001). Managers must develop skills and capabilities to understand the expectations of stakeholder groups, and customers in particular, for sustainable behavior (Harrison et al., 2010). This recommendation also suggests the importance of strengthening the organizational link between supply chain management and marketing.

Beyond developing skills to understand the expectations of the market, companies should work to ensure sustainable behavior throughout the supply chain, to protect themselves from chain liability. We recommend all companies, not just large firms, do so. We also note that firms cannot focus only on their large, strategically important, tier-1 suppliers; they must go beyond such predominant approaches (Chatain, 2011; Surroca et al., 2010). Moreover, we reaffirm findings that suggest supply chain managers should develop more profound capabilities for supplier development, collaboration, and innovation (Gavronski et al., 2011; Klassen and Vereecke, 2012), then transfer those capabilities across tiers (Mena et al., 2013). For example, IBM's Social and Environmental Management System, implemented among its approximately 30,000 tier 1 suppliers, helps them enforce regulations among their suppliers, that is, among the tier 2 suppliers of IBM.

If an incident occurs, well-developed communication strategies must be in place to share information with consumers. However, according to our findings, the only factors that can mitigate the burden of being held accountable for unsustainable behavior by suppliers is if the incident is due to *force majeure*, is less severe, or arose because an employee acted independently, not in coherence with company behaviors.

5.4. Limitations

The choices we made for this study imply certain limitations. First, we focused on environmental behaviors and incidents in the supply chain, because environmental degradation more or less directly and immediately affects human well-being. Our manipulation of incident severity combined social and environmental dimensions of sustainability though, which may confound our results. Second, the products varied substantially across the four experimental vignettes (adhesives, clothing, cars, monitors), ranging from utilitarian to hedonic, from simple to complex, and from chemicals to high-tech products. These differences suggest greater generalizability of our findings, but they also could influence consumer perceptions of the supply chain. Third, our single-country focus raises the question of whether consumers from other countries react similarly when faced with unsustainable behavior in a supply chain. German consumers have a reputation for being very sensitive to environmental protection, so they may have high expectations about supply chain sustainability. Fourth, the use of vignettes only allowed us to assess consumers' *intended* responsibility attributions and emotional and behavioral reactions; we

did not directly measure *actual* consumer reactions to real unsustainable incidents. Consumers' intended reactions often differ from their actual behaviors, as demonstrated in studies of consumer buying behavior for products with environmental features (Auger and Devinney, 2007).

6. Conclusions and further research

The objective of this study has been to broaden our understanding of whether and when consumers hold focal firms responsible for the ecologically unsustainable behavior of their suppliers in upstream supply chains, using both the predictors and outcomes of such responsibility attributions. We posited that eight factors deduced from four AT dimensions (i.e., locus of causality, controllability, stability, and severity) would relate to responsibility attribution. However, our four vignette-based experiments reveal that only *force majeure*, a history of successful EMS implementation, and incident severity significantly affect the extent to which consumers hold the focal firm responsible for unsustainable behavior in the supply chain. No predictors related to controllability were significant; consumers do not acknowledge restrictions on the firm's control within the supply chain. Higher responsibility attributions relate to stronger feelings of anger and a higher propensity to boycott, which highlights the economic risk to focal firms. Thus this study establishes the chain liability effect: Consumers hold a focal firm responsible for behaviors and incidents upstream.

Additional research is warranted to determine how supply chain managers can effectively and efficiently extend their reach in the supply chain, to increase transparency, knowledge, and control. Researchers could explore the implications of negative incidents for the economic performance of the entire supply chain. Furthermore, in contrast with AT, our mediation analysis indicated

that consumers boycott some companies without ever feeling negative emotions; risk management research thus should investigate closely which factors trigger an immediate punishment, independent of negative emotions. We also propose that marketing researchers should determine whether the costs of efforts to prevent unsustainable supplier behavior can be transferred to the market. That is, does sustainable supply chain management increase consumers' willingness to pay? With regard to our finding that consumers blame the focal firm, it would be interesting to discover if they fail to comprehend the focal firm's limited control over tier 2 and tier 3 suppliers, or if they don't care and simply want to punish the most accessible entity, namely, the focal firm. Finally, we focused on environmental incidents, but it may be equally interesting to explore the antecedents and consequences of responsibility attributions for negative social incidents. Further research thus could investigate consumer perceptions and reactions to *socially* unsustainable supplier behavior.

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Appendix 1. Questionnaire items.

Construct	Questionnaire items
Responsibility attribution ^a	Please indicate the extent to which you agree with the following statements about the previously described situation. (1 = agree not at all–7 = agree totally) 1. ... is responsible. 2. ... is careless. 3. ... is thoughtless.
Anger ^b	Please put yourself into the place of the customers of ... Please evaluate to what extent you agree to following statements relating to their emotions: (1 = not at all likely–7 = very likely) 1. I as a customer of ... would be angry. 2. I as a customer of ... would be enraged. 3. I as a customer of ... would be offended.
Boycotting ^c	Please put yourself into the place of the customers of ... Please evaluate to what extent you agree to following statements relating to their reactions: (1 = not at all likely–7 = very likely) 1. I as a customer would do something to harm 2. I as a customer would do something to make ... pay for it. 3. I as a customer would boycott 4. I as a customer would not buy a ... from ... next time. (yes/no)
Manipulation checks	1. The primary cause for the incident was () <i>force majeure</i> or () a failure of the company. 2. The situation described happened within the company (1 = not at all–7 = totally) 3. How many direct and indirect contractors are involved in the described situation? (2, 3, or 4) 4. ... as a company is (1 = very small–5 = very large) 5. Leather as part of the automobile in the described situation is (1 = not important at all–5 = very important) 6. The probability that a similar incident will happen again in future is very high. (1 = not at all–7 = totally) 7. The described incident is very severe. (1 = not at all–7 = totally) 8. The described incident has primarily been caused by () the company Luxury Leather or () the individual head of the tanning department.
Social desirability ^d	Please evaluate to what extent you personally agree to following statements: (1 = not at all–7 = totally) 1. I sometimes feel resentful when I don't get my way. 2. I sometimes try to get even rather than forgive and forget.
Environmental values ^e	Please evaluate to what extent the following applies to you personally: (1 = applies not at all–7 = applies totally) 1. Unity with nature is very important for me.

^a Struthers et al. (2005).

^b Crossley (2009).

^c Fragale et al. (2009); Struthers et al. (2005).

^d Crowne and Marlowe (1960).

^e Schwartz and Bilsky (1990).

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