



When leaders forgive: encouraging radical innovation in more altruistic organizations

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When leaders forgive: encouraging radical innovation in more altruistic organizations

Abstract

Purpose: There is general agreement on the importance of innovation to improve business performance and competitiveness. In recent years, many studies have sought to unravel what conditions are conducive to innovation. Following this trend, the present study seeks to broaden the understanding of the antecedents of radical innovation. To this end, and drawing on Positive Organizational Psychology, the study focuses on the role of leaders and the importance of improving working conditions within companies, favoring innovation in more respectful and pro-social organizations.

Design/Methodology/Approach: The study provides, through structural equations, empirical evidence of the relationship between leader's forgiveness and radical innovation, using altruism as an explanatory variable. The study was conducted in a population of 11,594 Spanish companies. A sample frame of 554 questionnaires from 277 different firms was obtained.

Findings: Results confirm the hypotheses proposed in the model. Forgiveness, analyzed as a leader behavior, promotes altruism within companies and, in turn, radical innovation.

Originality/Value: This is one of the few empirical studies that analyzes the consequences of leader's forgiveness in the organizational context.

Keywords: forgiveness; leadership; leader behavior; radical innovation; altruism

1. Introduction

In the current competitive landscape, there is an ongoing debate, both in the academic and the business field, about the conditions that improve companies' competitiveness

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3 and performance. On the one hand, innovation appears to be one of the main
4 mechanisms to stand out in a globalized and changing environment, so that is the reason
5 why many studies try to reveal the factors behind innovation. On the other, economic,
6 financial or moral scandals have led to a growing concern about the conditions in which
7 organizations develop their activities and achieve their goals, including innovation. For
8 this reason, virtuous behaviors are every day more necessary within the organizations
9 (Rego *et al.*, 2010), demanding a shift in the way companies are managed.
10 Consequently, it is necessary to incorporate, within organizations, a humanistic point of
11 view in which individuals are motivated by helping others, altruism or service to others,
12 instead of focusing on egoistic goals (Chiva, 2014). The present research tries to
13 combine both facets by analyzing how, in an organizational context that takes care of
14 the employees' emotions and well being, it is possible to settle the conditions under
15 which innovation flourishes. This research draws on Positive Organizational
16 Scholarship (Cameron *et al.*, 2003), which focuses on the study of especially positive
17 outcomes, processes and attributes of organizations and their members.
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31 There are different innovation typologies that need to be differentiated when analyzing
32 their antecedents and consequences for organizations. Radical/incremental classification
33 is one of the most well-known measures in the academic field that allow to differentiate
34 between innovations according to the degree of change they produce. This research
35 focuses on radical innovation because this type of innovation provides important
36 benefits to the companies that develop it. Those organizations capable of developing
37 radical innovations are more valued by investors in financial markets, have greater
38 market power and are likely to be more profitable (Baker *et al.*, 2014). Radical
39 innovation can restructure the competitive landscape and potentially provide companies
40 a salient position in the market (Wang and Xu, 2018). Radical innovation is a
41 revolutionary or discontinuous change that advance the price/performance frontier by
42 much more than the existing rate of progress, while incremental innovation refines,
43 improves, and exploits an existing technical trajectory (Gatignon *et al.*, 2002).
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55 Leaders play an important role in facilitating innovation, as they encourage the
56 conditions to take risks, experiment, question paradigms or try new ideas. However,
57 leadership styles that focus on ethical goals, promote employees' well being or concern
58 for others are underestimated in the literature about innovation (Hughes *et al.*, 2018).
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3 Consequently, as these values are increasingly important to achieve healthier and more
4 responsible organizations, it seems relevant to study the effects of these leaders when
5 working on innovation. In this vein, Caldwell and Dixon (2010) highlighted the
6 importance of studying leadership committed with the improvement of the welfare of
7 others while pursuing the objectives of the organization. However, as leadership styles,
8 such as servant or ethical, are too broad and include many variables, in the latest years
9 there are some lines of research that advocate for studying concrete leader behaviors
10 (Hughes *et al.*, 2018). In such a way, it is possible to clarify how the different behaviors
11 that characterize these leaders influence innovation.
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20 This study focuses on leader's forgiveness. The selection of this behavior is grounded
21 on different reasons. Firstly, because of the very nature of the innovation project, which
22 is related to uncertainty, risk, failure and complexity; so problems, tension or difficulties
23 are likely to occur. Secondly, because forgiveness may be a response to manage the
24 tension related to the conflict of innovation, and because despite of its potential benefits,
25 forgiveness is an undervalued behavior in the workplace (e.g. Rego *et al.*, 2010). For
26 instance, Thompson and Korsgard (2019) stated that research of the outcomes of
27 forgiveness in the workplace is still in the "nascent stages", and scholars are taking the
28 first steps to disentangle the workplace outcomes related to forgiveness. Similarly,
29 Costa and Neves (2017, p. 125) stated that "there is a lack of forgiveness scholarship in
30 organizational sciences". Nonetheless, in the latest years, the interest to study
31 forgiveness in the organizational context is increasing among scholars (Fehr and
32 Gelfand, 2012; Guchait *et al.*, 2016)
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44 In addition, as leadership does not occur in a vacuum, it is necessary to consider the
45 organizational context in which leadership takes place. Moser *et al.* (2019) argued that
46 the relationship between leadership and innovation is not straightforward, so additional
47 factors have to be taken into account. For this reason, this study considers the conditions
48 promoted by leader' forgiveness within the organization in order to develop innovation.
49 Fehr and Gelfand (2012) argued that studies about forgiveness in the workplace usually
50 focus on individual or micro level processes, ignoring the role of the organizational
51 context.
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3 Given that forgiveness has been considered a prosocial behavior (e.g. Barclay and
4 Saldanha, 2016), it is supposed that it may enact prosocial responses in the organization.
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6 However, Karremans and Van Lange (2004) stated that there was little empirical
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8 research examining this relationship, and, to the best of our knowledge, little has been
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10 done in the latest years following this line. As altruism is considered a prosocial
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12 behavior increasingly important in the organizational literature (Chiva, 2014), it is
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14 worth to analyze how forgiveness may promote an altruistic context that facilitates
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16 innovation. Although there are evidences that forgiveness may promote altruism, it
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18 seems that this relationship has not been empirically tested. So the goal of this research
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20 is to study the mediating effect of altruism when analyzing the effect of leader's
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22 forgiveness on radical innovation.

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24 In the following sections, we summarize some of the literature about leader's
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26 forgiveness and altruism, and propose the hypotheses that make up the present study.
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28 Then, we describe the methodology used, present results and conclusions, discuss the
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30 limitations of the research and suggest future lines of study.

31 32 33 **2. Literature review and hypotheses**

34 35 36 **2.1 Leader's forgiveness**

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40 Thompson and Simkins (2017) stated that forgiveness in the workplace is different to
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42 forgiveness in other personal relationships, as the relationships in the workplace are not
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44 freely elected, and are influenced by organizational structures, power or status
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46 differences. Aquino *et al.* (2003) defined forgiveness as "a process by which an
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48 offended worker cognitively acknowledges the wrongfulness of an injurious act and
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50 deliberately chooses to release negative emotions and inhibit the desire for revenge".
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52 Negative emotions may come from another individual, colleague or supervisor, or from
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54 the organization (Costa and Neves, 2017). Forgiveness implies letting go own and other
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56 mistakes and, in addition, learn from them (Caldwell and Dixon, 2010). It may repair
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58 damaged workplace relationships and helps to overcome the negative emotions
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60 resulting from injuries and personal offences. It appears when resentment, negative

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3 emotions or bitterness are abandoned after an offence, being replaced by positive
4 emotions and prosocial behaviors (Cameron and Caza, 2002).
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8 Davidhizar and Laurent (2000) argued that forgiveness entails accepting that not
9 everyone is perfect, and putting oneself in the position of the others. It is common that
10 offences appear in social relationships. Humans are imperfect and commit offences in
11 the workplace, such as being inconsiderate, self-serving or careless. In addition, errors
12 occur, and it is impossible to eliminate them completely (Guchait *et al.*, 2016). Many
13 times, these mistakes are unintentional and, for this reason, forgiveness plays an
14 important role in the organizations to manage misunderstandings or harmful situations
15 (Quick and Goolsby, 2013).
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24 When conflict arises, and steps are not taken to manage harm or bitterness, relationships
25 in the workplace deteriorate (Kurzynski, 1998), as offences, transgression or harm leave
26 a feeling of injustice in the individuals (Van Tongeren *et al.*, 2015). These
27 transgressions may lead to undesired outcomes such as toxic or hostile environments.
28 However, forgiveness may mitigate these adverse outcomes (Thompson and Korsgard,
29 2019), acting as a mechanism to reduce the negative consequences of offences and
30 grievances (Toussaint and Webb, 2005), and stopping the cycle of anger and hostility
31 (Thompson and Simkins, 2017).
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39 From a leadership approach, forgiveness has been stressed as a behavior of leaders who
40 support others' growth and wellbeing in the organization. Rodríguez-Carvajal *et al.*
41 (2014) highlighted that forgiveness entails a willingness to empathize with their
42 employees, as leaders try to understand the circumstances that led to mistakes or
43 disputes. In a competitive context that demands more committed and participative
44 workers, Caldwell and Dixon (2010) argued that forgiveness is one of the critical values
45 of leaders in organizations that want to inspire and motivate their employees to do their
46 best, maximizing value for their companies.
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55 Forgiveness is both an intra and interpersonal event (Aquino *et al.*, 2006). That is, it
56 starts with oneself and then it is extended to others. People need to be able to forgive
57 their own mistakes if they want to forgive others. This is difficult for managers in the
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3 business environment because they usually want to play a role model and are unlikely to
4 accept their own errors and mistakes (Davidhizar and Laurent, 2000).
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8 Previous research has studied both the determinants or antecedents of forgiveness (e.g.
9 Aquino *et al.*, 2006) and their consequences. Forgiveness is positively associated with
10 mental, physical, social and emotional health (e.g. Cameron, 2007); restores and
11 strengthens interpersonal relationships (Bradfield and Aquino, 1999; Toussaint and
12 Webb, 2005); reinforces relationships in the workplace (Adams *et al.*, 2015; Thompson
13 and Korsgard, 2019); increases meaning in life (Van Tongeren *et al.*, 2015); reduces
14 revenge in situations of harmful behavior among employees (Wang *et al.*, 2018);
15 reduces the injustice gap (Van Tongeren *et al.*, 2015); improves decision making,
16 productivity, cooperation, optimism or trust (Thompson and Simkins, 2017); creates an
17 atmosphere of confidence (Rodríguez-Carvajal *et al.*, 2014); reduces the negative
18 consequences of errors and offences in the workplace, promoting positive outcomes
19 such as increasing job satisfaction, commitment and learning (Guchait *et al.*, 2016);
20 reduces conflict which, in turn, may encourage people to engage in prosocial behaviors
21 (Barclay and Saldanha, 2016); and helps individuals to manage negative workplace
22 events (Costa and Neves, 2017)
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36 Forgiveness is not as natural as other negative or angry responses to transgression or
37 unfairness, such as avoidance, hostility or revenge (Davidhizar and Laurent, 2000;
38 Thompson and Korsgard, 2019). According to Barclay and Saldanha (2016), it is
39 especially difficult to forgive in the organizational context where it is considered a rare
40 and under-valued behavior.
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46 Adams *et al.* (2015) argued that, although forgiveness is a way to resolve conflicts and
47 repair relationships within the organization, forgiving is a complex process that has to
48 be managed properly because, under certain conditions, it may have undesired
49 consequences, worsening conflict. Forgiveness does not entail acting with impunity.
50 Forgiveness is not forgetting, condoning, excusing, giving up, being soft, pardoning or
51 denying (Cameron and Caza, 2002). It does not minimize the importance of mistakes
52 and offences; however, it alleviates their negative consequences and helps employees to
53 learn from them (Guchait *et al.*, 2016).
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2.2 Altruism

Smith *et al.* (1983, p. 657) defined altruism as the “behavior that is directly and intentionally aimed at helping a specific person in face-to-face situations (for instance, orienting new people or assisting someone with a heavy workload). Batson *et al.* (2002) highlighted that motivation is the central issue in altruism and argued that altruism is a specific form of motivation for one organism, usually human, to benefit another.

Altruism is also voluntary and appears to help those who already have a problem (Organ, 1988). Organ (1988, p. 96) defined altruism as “voluntary actions that help another person with a work problem, such as instructing a new hire on how to use equipment, helping a coworker catch up with a backlog of work, fetching materials that a colleague needs and cannot procure on his own”. Moreover, according to Podsakoff *et al.* (1990), altruism entails helping, even when it is not required, those who have been absent, have work related problems or heavy work loads.

Altruism does not expect any reward. Kanungo and Conger (1993, p. 42) argued that altruistic behavior “benefits others regardless of the beneficial effects of such behavior for the benefactor”. It promotes selfless or unselfish concern for others, and it is a motivational state that focus on increasing other’s welfare (Chiva, 2014). In a similar way, Singh and Kirshnan (2008) stated that altruism essentially means “putting others” objectives before one’s own. In fact, in the literature, some different types of altruism have been differentiated. Kanungo and Conger (1993) differentiated between utilitarian altruism (e.g. helping another while helping oneself) and genuine altruism (helping others without any regard of self-interest and high self-sacrifice). Moreover, Batson *et al.* (2002), argued that “if one’s ultimate goal in benefiting another is to increase the other’s welfare, then the motivation is altruistic. If the ultimate goal is to increase one’s own welfare, then the motivation is egoistic.” The idea of altruism studied in this paper involves helping others without seeking for personal interest.

As in the case of forgiveness, altruism is another unusual concept in the business field, where competition is the norm. Nonetheless, the current complex competitive environment demands a higher degree of interdependence and cooperation, which will require more acts of altruism that will need proper workplace conditions to encourage

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3 them (Kanungo and Conger, 1993). In the academic field, an increasingly number of
4 papers are giving clues about the importance of altruism in the business environment.
5 For instance, altruism usually appears as one of the most important dimensions of
6 organizational citizenship behavior (Ocampo *et al.*, 2018), and it is a common
7 dimension in thriving leadership styles that are concerned for the welfare of others, such
8 as servant leadership (Van Dierendonck and Nuijten, 2011).
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15 In this review, it has been stressed that altruism plays an important role in interpersonal
16 relationships. Altruistic behavior may benefit other individuals (in the organizational
17 context others may be peers, supervisors or subordinates). However, altruism also
18 appears in other contexts. The benefits can be directed to different levels (interpersonal,
19 departmental, organizational or societal) (Kanungo and Conger, 1993). For example,
20 Gerke *et al.* (2017) studied altruism between organizations. In this case, altruism is
21 defined as a “behavior that is directed at helping other cluster members acquire skills,
22 knowledge, or resources”, for example sharing knowledge or giving advice.
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Previous research has analyzed the promoters of altruism in the workplace and its
consequences for organizations and employees. For instance, it promotes organizational
performance (Mallén *et al.*, 2015), radical innovation (Domínguez-Escrig *et al.*, 2016),
or organizational learning (Guinot *et al.*, 2015).

2.3 *Leader's forgiveness and altruism*

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Forgiveness shares with altruism a similar basis. As stated by Cameron and Caza (2002,
p. 39), “forgiveness in search of reward is not true forgiveness. Virtues are inherently
their own reward or, in other words, forgiving occurs for its own sake, not to obtain
external recognition or acknowledgement”.

Although, to the best of our knowledge, there are not studies empirically analyzing the
effect of forgiveness on altruism in the organizational context; conceptualizations,
definitions and research on similar ideas, suggest that there would be a relationship
between forgiveness and altruism. Firstly, forgiveness is considered a prosocial
behavior and it has been associated with concern for others (Thompson and Simkins,
2017) and other oriented-emotions (Fehr and Gelfand, 2012). Karremans and Van

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3 Lange (2008) stated that forgiveness may promote interpersonal behaviors that serve the
4 well-being of the relationship and the people involved.
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8 Forgiveness is seen as a prosocial and altruistic act related to empathy (Shepherd and
9 Belicki, 2008). Caldwell and Dixon (2010) argued that forgiveness is empathetic rather
10 than self-serving, so it is a behavior that looks towards others. Empathy, understanding
11 other's problems or taking another person point of view may promote altruism
12 (Kanungo and Conger, 1993). By forgiving, people sacrifice some of their interests to
13 benefit the relationships with their partners, increasing the commitment of people to
14 strengthen their relationships (Aquino *et al.*, 2003).
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22 Besides, forgiveness requires abandoning negative emotions and promotes positive and
23 prosocial behaviors, replacing resentment or bitterness by empathy or concern for others
24 (Cameron and Caza, 2002). In other words, it is a mechanism to respond prosocially to
25 conflict (Fehr and Gelfand, 2012). By forgiving, people set aside negative emotions, do
26 not demand the offender any compensation, renounce to retribution or punishment, and
27 release injurers from any obligation (Bradfield and Aquino, 1999).
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34 Rego *et al.* (2010) suggested that employees are likely to help colleagues and
35 supervisors when perceive that virtuous behaviors, such as forgiveness, are promoted
36 within the organization. These authors studied how perceptions of organizational
37 virtuousness predict organizational citizenship behaviors. Organizational virtuousness
38 refers to organizational contexts where virtues, such as forgiveness, are practiced and
39 supported, while organizational citizenship behaviors are considered extra-role
40 behaviors, being altruism one of them. They found that the relationship between
41 organizational virtuousness and altruism was positive, both directly and mediated by
42 affective well-being.
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51 Some empirical research provides evidence that suggest a positive relationship between
52 forgiveness and altruism. For instance, Karremans and Van Lange (2004:207) stated
53 that "forgiveness predicts pro-relationship responses, motivated by a willingness to set
54 aside personal well-being to enhance the well-being of the partner or relationship". By
55 forgiving offences, people renounce to self-interest, follow broader interests, such as the
56 other wellbeing or well-being of a relationship. These authors found that forgiveness
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3 favors positive responses to wrongdoing, and it is positive associated to willingness to
4 sacrifice, that is, willingness to set aside one's own needs for the needs of the partner
5 and cooperation towards the offender.
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10 Besides, Thompson and Simkins (2017) found that, when forgiveness is other-oriented,
11 that is, when forgiveness removes negative thoughts on the basis of concern for others,
12 it is positively related to person-focused interpersonal citizenship behavior, promoting a
13 tendency to help other people with personal struggles and concentrating on boosting
14 another people well-being.
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20 Finally, forgiveness tends to create a sense of "we" instead of "me" (Karremans and
21 Van Lange, 2008) and by creating this pluralistic vision of the world, people are more
22 likely to engage in prosocial behaviors with others (Thompson and Korsgard, 2019).
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27 As a result, the first hypothesis of the study is proposed:
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30 H1: Leader's forgiveness has a positive effect on altruism
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34 35 **2.4 Altruism and radical innovation** 36 37

38 Helping behavior, which among other features includes altruism, is crucial in
39 organizations that develop innovations (see Grodal *et al.*, 2015). Moser *et al.* (2019)
40 studied the influence of prosocial environments on innovation, and found how helping
41 behaviors and information sharing promoted innovation in health care teams. Helping
42 behaviors create a positive environment in which employees are more committed with
43 the organization, increases relationships, cooperation and sharing of knowledge, which
44 may foster innovation.
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52 Altruism has been usually considered as one of the most relevant organizational
53 citizenship behaviors (Ocampo *et al.*, 2018), which are extra-role behaviors that seek an
54 effective functioning of the organization (Organ, 1988). Gerke *et al.* (2017) studied the
55 role of interorganizational citizenship behaviors in the innovation process. They found
56 that altruism facilitates the different phases of the innovation process, such as ideation,
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3 invention and exploitation. Altruism promotes sharing knowledge and information,
4 informal collaborations, selfless mentoring and consulting, collaboration,
5 communication, cooperative behaviors, and so on, leading to innovation.
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10 Besides, altruism promotes organizational learning, which may help companies to
11 innovate as they are more able to adapt to a changing environment through
12 experimentation or risk taking; and reduces organizational conflict, that helps
13 employees to be more receptive to other people ideas, share new information, listen to
14 and accept new schemes (Guinot *et al.*, 2015), which may boost creativity and
15 innovation.
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22 In this vein, in an empirical study, Domínguez-Escrig *et al.* (2016) concluded that
23 altruistic behavior in leaders boosts radical innovation by promoting an organizational
24 context that facilitates risk taking, experimentation, dialogue, participative decision
25 making and interaction with the external environment.
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31 Finally, Grant and Berry (2011) found that prosocial motivation, conceptualized as the
32 desire to help or contribute to other people, fuels creativity. When employees consider
33 other's point of view, they are likely to develop ideas that are novel and useful in order
34 to help and benefit others.
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39 All these arguments lead to the second hypothesis:

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43 H2: Altruism has a positive effect on radical innovation
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47 ***2.5 Leader's forgiveness and radical innovation: the mediating effect of altruism***

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51 To the best of our knowledge, few researches have empirically analyzed the relationship
52 between forgiveness and innovation. Some studies have focused on its effect on
53 creativity (e.g. Lee *et al.*, 2016). However, in theoretical reviews, it is possible to find
54 claims that defend a positive effect of forgiveness on innovation.
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3 Some authors suggested that forgiveness promotes creativity and innovation (Stone,
4 2002), as it provides a safe and supportive environment in which employees feel
5 confident to take risks, communicate and share information. They know that they will
6 not be punished, embarrassed or criticized by their errors. In this more flexible
7 environment, organizations are more likely to learn and develop creative ideas
8 (Cameron and Caza, 2002) to adapt to changing market conditions (Guchait *et al.*,
9 2016).

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17 Cameron *et al.* (2004) argued that virtuous behaviors, such as forgiveness, promote
18 innovation because they foster positive emotions that inspire employees. As a
19 consequence, they feel more motivated to access to new ideas and information, develop
20 creative thinking, experiment, and so on. In a similar way, Caldwell and Dixon (2010)
21 highlighted that forgiveness promotes risk taking and creativity, by encouraging
22 employees to maximize their potential.

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29 On the other hand, when steps are not taken to manage conflict, negative emotions arise,
30 such as resentment and revenge, hampering productivity, trust or innovation within
31 organizations (Caldwell and Dixon, 2010). In unforgiving cultures, it is unlikely that
32 people share their talents, hindering innovation (Stone, 2002).

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Errors or failure are likely to occur, and forgiveness accepts failing, reinforces workers' self-esteem, reconcile relationships and restores the conditions to keep working with confidence (Caldwell and Dixon, 2010). It is important to learn from the mistakes rather than punishing them. Forgiveness is essential for innovation as it favors learning, and accepts mistakes and failing as a natural possibility when developing new ideas and attempting new projects (Lennick and Kiel, 2011).

As suggested, forgiveness may facilitate altruism within companies. These organizational contexts may be seen as fairer and more ethical, improving the conduct of the individuals who are more motivated and committed with the organization, conducting to more innovation (Seeck and Diehl, 2017). Forgiveness also facilitates cooperation, taking decisions to benefit other people (Tan *et al.*, 2017) and behaviors in which employees voluntarily help each other to address work-related problems (Fehr and Gelfand, 2012).

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5 Consequently, leader's forgiveness facilitates the conditions to foster innovation, and it
6 is reasonable to propose, according to the former hypotheses, that this may be possible
7 through an organizational context in which helping behaviors and altruistic motivation
8 lay the foundations to freely share new ideas, question current patterns or experiment
9 without fear of reprisals. So, the last hypothesis is:

15 H3: Leader's forgiveness promotes radical innovation through altruism

18 **3. Research methodology**

21 **3.1 Data collection**

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25 The research was based on a sample frame of 11,594 Spanish companies which were
26 included in a database of the Spanish Ministry of Economy and Competitiveness. 900
27 companies of this list were randomly selected, contacted by telephone and invited to
28 participate in the study, and those that agreed to take part in the study provided their
29 responses for two questionnaires. Finally, fieldwork was conducted in 2015 and data
30 from 277 different companies were gathered (it implied a response rate of 30.80% and a
31 total of 554 questionnaires).

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39 To assess non-respondent bias, some characteristics (firm age, turnover, export intensity
40 and number of employees) from early and late respondents were compared. Independent
41 sample t-test yielded to the conclusion that none of the means of the firms'
42 characteristics showed significant differences for each group (for all the characteristics
43 under study, $p > .05$).

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49 To prevent common method bias, two different respondents were asked. Human
50 resource managers answered the questions related to leader's forgiveness and altruism,
51 while general managers made their views known about radical innovation. These two
52 typologies of managers were selected because of their experience and position within
53 the organization, which makes them a reliable source of information. Participation was
54 encouraged by ensuring the anonymity of all the participants which also allows to
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3 guarantee the honesty in the responses, enhancing the reliability of the results and
4 conclusions.
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8 The constructs were measured using a 7-point Likert scale, with scores that ranged from
9 1 (totally disagree) to 7 (totally agree). Respondents were reached through telephone
10 interviews, as this method facilitates to contact with managers and people with
11 responsibility within organizations.
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17 As this study was conducted in Spain, all the statements included in the questionnaires
18 were addressed in Spanish. The scale which measures forgiveness was originally
19 developed in Spanish, while the radical innovation and altruism scales were initially
20 developed in English. To guarantee the accuracy of the translation, a double-back
21 translation was used.
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25 26 27 **3.2 Measurement instruments** 28 29

30 Leader's forgiveness was measured using the scale validated by Rodríguez-Carvajal et
31 al. (2014) who included three items to measure this behavior in servant leaders: (1) The
32 supervisors of this company keep criticizing people for the mistakes they have made at
33 work, (2) the supervisors of our company maintain a hard attitude towards people who
34 have offended them at work, and (3) the supervisors of this company find it difficult to
35 forget things that went wrong in the past. All these items were reverse-scored and this
36 construct had a Cronbach's alpha of .91.
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44 Radical innovation was measured on the basis of the scales developed by Marvel and
45 Lumpkin (2007) and Gatignon *et al.* (2002). Respondents were asked to think about
46 product innovations that had been developed by their company in the previous two
47 years. The scale comprised six items: (1) these innovations represent an entirely new
48 type of product/service; (2) these innovations can be described as totally new
49 innovations; (3) these innovations meet a want or a need that has not been addressed by
50 other products/services; (4) these innovations involve a revolutionary change from the
51 latest generation of these products; (5) these innovations could be described as a new
52 product line; and (6) these innovations are significant or leading innovations. The
53 Cronbach's alpha obtained by this construct was .96.
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5 Altruism was measured adapting the scale of Podsakoff et al. (1990). This measure was
6 made up of 5 items: (1) the people of this company help others who have been absent,
7 (2) the people of this company help others who have heavy work loads, (3) the people
8 of this company help orient new people even though it is not required, (4) the people of
9 this company willingly help others who have work related problems, and (5) the people
10 of this company are always ready to lead a helping hand to those around them. This
11 construct obtained a Cronbach's alpha of .95.
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18 **3.3 Control variables**

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22 Export intensity (percentage of exports on total sales), turnover, number of employees
23 and firm age (measured in years since foundation) were used as control variables
24 because former research has stressed their potential influence on the capability of the
25 organizations to innovate (Beugelsdijk, 2008; Camisón-Zornoza *et al.*, 2004; Coad *et*
26 *al.*, 2016).
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32 **3.4 Analyses**

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36 Structural equations and the statistical software AMOS-26 were used to test and
37 validate the proposed model (Figure 1). In addition, a bootstrapped confidence interval
38 was used to validate the proposed indirect effect.
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42 **4. Results**

43 **4.1 Descriptive statistics and psychometric properties of the measurement scales**

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46 With regard to the characteristics of the participants in the study, 71.20% were male,
47 with an average age of 45.9 years and an average tenure of 11.7 years. Table 1 shows
48 descriptive statistics for each of the control variables, i.e. annual turnover, number of
49 employees, firm age and export intensity.
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58 Table 2 gathers up the descriptive statistics, which includes means, correlations and
59 standard deviations of the constructs. Before using structural equation modeling to test
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3 the hypotheses, the dimensionality, reliability, as well as the convergent, discriminant
4 and content validity of the constructs were studied, following recommended practices in
5 the literature (Anderson and Gerbing, 1988).
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9 Regarding the structure of the constructs, in addition to confirmatory factor analyses, a
10 full measurement model that includes all the variables was assessed (Anderson and
11 Gerbing, 1988). The overall fit of this general model was: Chi square (d.f.) =
12 128.23(74); $p < .001$; CFI = 0.99; RMSEA = .05. According to these results, it is
13 confirmed that the constructs are different from one another.
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18 Table 3 shows the results of the reliability analyses. Cronbach's alpha and composite
19 reliability values exceeded the minimum accepted value of .7 (Nunnally, 1978).
20 Besides, the average variance extracted is also above the minimum accepted threshold
21 of .5 for all the constructs.
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26 As all the constructs studied were measured using validated scales, content validity is
27 supported.
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31 Convergent validity was evaluated with the average variance extracted (Fornell and
32 Larcker, 1981), the Bentler-Bonett coefficient, and the magnitude of the factor loadings
33 are taken as a reference. All the constructs are above the minimum recommended
34 values. Average variance extracted are above .5, BBNFI exceeds .9 in each construct,
35 and the magnitude of factorial loadings are above .4. As a result, the convergent validity
36 of all the constructs is guaranteed. Table 4 shows how the discriminant validity is also
37 supported. In this case, average variance extracted has to be greater than the square root
38 of the construct correlation.
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47 ***4.2 Testing the research hypotheses***

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51 New trends do not require evidence of a total effect to estimate direct and indirect
52 effects (Hayes, 2013). However, the results of the total effect (Figure 2), which analyzes
53 the effect of leader's forgiveness on radical innovation, were statically different from
54 zero ($A = .22$, $t = 3.49$, $p < .001$).
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Different conditions must be met to support the mediation: if there is a significant relationship in the total effect model (leader's forgiveness and radical innovation), this must decrease or become non-significant in the mediation model; the mediation model explains more variance in the dependent variable (radical innovation) than the total model effect; there is a significant relationship between leader's forgiveness and altruism; and between altruism and radical innovation. Additionally, bootstrapping analysis must be conducted to test the significance of the mediated effect (Hayes, 2013).

As all the aforementioned conditions were met, the mediating role of altruism in the relationship between leader's forgiveness and radical innovation was confirmed (Figure 3): the significant relationship between leaders' forgiveness and radical innovation decreases when the mediating effect of altruism is included ($B = .15, t = 2.40, p = .016$); the mediated model explains more variance than the direct effect model (.13 vs. .05); relationship between leaders' forgiveness and altruism is significant ($C = .25, t = 3.91, p < .001$), confirming Hypothesis 1; (4) and between altruism and radical innovation ($D = .28, t = 4.55, p < .001$), which confirms Hypothesis 2. Finally, the estimated indirect effect of leaders' forgiveness on performance is .07. The 95% bias-corrected confidence interval for the indirect effect based on a 5,000 bootstrap sample was entirely above zero (.04 to .13). Consequently, the indirect effect of leaders' forgiveness on radical innovation is significantly different from zero, and so the null hypothesis of no mediation can be rejected. Therefore, Hypothesis 3 is confirmed.

Regarding the control variables, none of them has a significant effect on radical innovation (turnover: $F1 = .02, t = .09, p = .926$; number of employees: $F2 = -.02, t = -0.10, p = .918$; firm age: $F3 = -.02, t = -.40, p = .689$; export intensity: $F4 = -.02, t = -.37, p = .708$).

5. Discussion

This manuscript contributes to the advancement of Positive Organizational Scholarship providing empirical evidence of the relationship between two prosocial behaviors, forgiveness and altruism, and their effect on the development of radical innovation. This research analyzed the mediating effect of altruism in the relationship between leader's forgiveness and radical innovation. This is one of the few empirical studies that focus

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3 on the effects of forgiveness in the organizational context. Results confirmed all the
4 proposed hypotheses: leader's forgiveness promotes radical innovation through
5 altruism; leader's forgiveness fuels altruism; and altruism favors radical innovation.
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10 These results have relevant implications for the academic literature related to leadership,
11 altruism and innovation. Regarding leadership, recent studies have highlighted that
12 leaders play an important role to develop contexts that promote innovation. Different
13 leadership styles such as transformational, ethical or servant have a positive impact on
14 innovation. However, a growing trend in research demands a specific focus on
15 leadership behaviors and the present study follows this line. In the latest years, studies
16 that analyze behaviors that show concern for others and enhance organizational welfare
17 have been gaining interest. As a consequence, many of them have demonstrated the
18 importance of these behaviors to promote innovation. Compassion, empathy, altruism or
19 stewardship have been positively related to innovation. In the same vein, the present
20 study expands this idea by demonstrating the positive effects on leader's forgiveness to
21 foster radical innovation, while facilitating a context that favors altruism.
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32 In addition, the obtained results allow to deepen on the antecedents and consequences of
33 altruism within the organization. Results are consistent with previous studies that
34 positively relate altruism to innovation. The same can be said of the effects of
35 forgiveness on altruism, as this concept has been highlighted as a mechanism to obtain
36 altruistic outcomes. However, although forgiveness has been associated with concern
37 for others, to the best of our knowledge, this is the first empirical study that analyzes
38 both concepts from a leadership approach. The conclusions achieved are on the same
39 wavelength with previous studies, which consider forgiveness a means to foster more
40 altruistic contexts.
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50 This study also improves the knowledge of the promoters of radical innovation. In the
51 latest years, demands to study the influence of leadership on radical innovation have
52 appeared, and empirical studies have analyzed its effects, by studying the effect of
53 concrete leader behaviors. However, it is unusual to study prosocial or virtuous
54 behaviors as antecedents of this type of innovation. This is one of the few studies that
55 follow this line of research, confirming the ideas of previous research, that is, that these
56 behaviors may be positive to successfully develop this type of innovation.
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5.1 Practical implications

The improvement of workplace conditions, the pursuit of happiness or the enhancement of employees' wellbeing has been put into the spotlight in the latest years. However, the turbulent and globalized context in which companies operate, forces them to be competitive, many times at the expense of the working conditions of the employees. The results achieved in this research show that it is possible to develop healthy and safe work environments and, at the same time, reinforce the conditions to be competitive. Radical innovations are a means to improve financial and non-financial outcomes. So, by promoting forgiveness and altruism, it is possible to facilitate a degree of innovation that may ameliorate organizational competitiveness, ensuring the survival of companies in the long term.

Through human resource policies, companies have to assure that they incorporate employees with a forgiving culture, specifically if they have to be promoted to leadership roles. Managers are normally selected by their tendency to perfection and excellence, so it confronts with the idea behind forgiveness: accept mistakes and so on (Davidhizar and Laurent, 2000). In addition, as leadership behaviors may be trained, organizations might incorporate programs to foster or develop these skills among their employees, focusing again on those with leader responsibilities. Finally, if possible, it would be highly interesting to introduce evaluating tools to measure the compliance of the behaviors studied in this research.

Besides, previous research has demonstrated or proposed that there are other mechanisms to facilitate forgiveness in the organizational context that should be considered to achieve the goals suggested in the present research. For instance, Barclay and Saldanha (2016) stressed out the importance of expressive writing interventions; Fehr and Gelfand (2012) highlighted the role of cultural values and leader attributes to allow forgiveness climates; and pointed out some organizational practices to foster forgiveness, such as restorative justice, employee support programs, mindfulness training, etc.

5.2 Limitations and future research

The study has some limitations: it focuses on a specific type of innovation (radical); the fieldwork was carried out in Spain and only analyzed Spanish companies, so the conclusions are only valid for organizations of this country. On the other hand, data were gathered from leaders of the organizations.

Future studies should study the effects of leader's forgiveness in other types of innovation, such as incremental. Differentiating between innovation stages, and product, process or service innovations would also be promising lines for future research. Moreover, conducting the same studies in other countries might provide a wider picture of the effects of leader's forgiveness on radical innovation. As different studies and rankings, such as the European Innovation Scoreboard, classify countries according to their innovative performance, it would be of interest to analyze these variables in companies of countries that achieve a different classification from Spain.

In addition, when analyzing forgiveness, differences between gender, age and ethnicities should be also considered, as proposed by other researchers (Lawler *et al.*, 2005). In the same line, gender differences should be studied in the case of altruism, as previous research has provided conflicting and contradictory results (see Ocampo *et al.*, 2018).

Future studies should also focus on companies of the same sector, differentiate between manufacturing and service organizations, startups and incumbent companies, or large and SMEs enterprises. Although managers are a confident information source to obtain information for academic research, it would be interesting gather information about leader's forgiveness and altruism within the organization asking both employees and managers.

Finally, the study analyzes the mediating effect of altruism in the relationship between leader's forgiveness and radical innovation. Taking into account former studies and the literature review conducted in this research, other mediating variables should be studied, such as compassion, trust or organizational learning.

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Table 1. *Descriptive statistics of the control variables*

| Annual turnover | | Number of employees | | Firm age | | Export intensity | |
|-----------------------------|--------|---------------------|--------|---------------|--------|------------------|--------|
| Up to 500,000 euros | 4.69% | Up to 10 | 1.44% | Up to 5 years | 0.72% | 0% | 11.60% |
| From 500,001 to 1,000,000 | 7.58% | 11-25 | 30.32% | 6-10 | 12.64% | Up to 25% | 38.94% |
| From 1,000,001 to 5,000,000 | 57.04% | 26-50 | 40.43% | 11-20 | 32.85% | 26-50% | 33.21% |
| More than 5,000,000 | 30.69% | 51-100 | 20.58% | More than 20 | 53.79% | 51-75% | 11.19% |
| | | More than 100 | 7.22% | | | More than 75% | 5.05% |

Table 2. *Factor correlations, means and standard deviations*

| | Mean | s.d. | For | Alt | RI |
|----------------------|------|------|-------|-------|------|
| Leader's forgiveness | 4.2 | 1.5 | 1.00 | | |
| Altruism | 5.5 | 1.1 | .25** | 1.00 | |
| Radical innovation | 4.7 | 1.6 | .21** | .30** | 1.00 |

Notes: For the standard deviations and factor correlations, we used the mean of the items making up each dimension. ** Significant correlation at $p < 0.01$. For=Forgiveness; Alt=Altruism; RI= Radical innovation.

Table 3. *Reliability of the measurement scales*

| Construct | Composite reliability | Extracted mean variance | Cronbach's alpha |
|----------------------|-----------------------|-------------------------|------------------|
| Leader's forgiveness | .91 | .77 | .91 |
| Altruism | .95 | .79 | .95 |
| Radical innovation | .97 | .83 | .96 |

Table 4. *Discriminant validity*

| | For | Alt | RI |
|----------------------|-------|-------|-------|
| Leader's forgiveness | (.77) | | |
| Altruism | .06 | (.79) | |
| Radical innovation | .04 | .09 | (.83) |

Notes: In parentheses: average mean extracted. For=Forgiveness; Alt=Altruism; RI= Radical innovation.

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Figure 1. Conceptual model and hypotheses

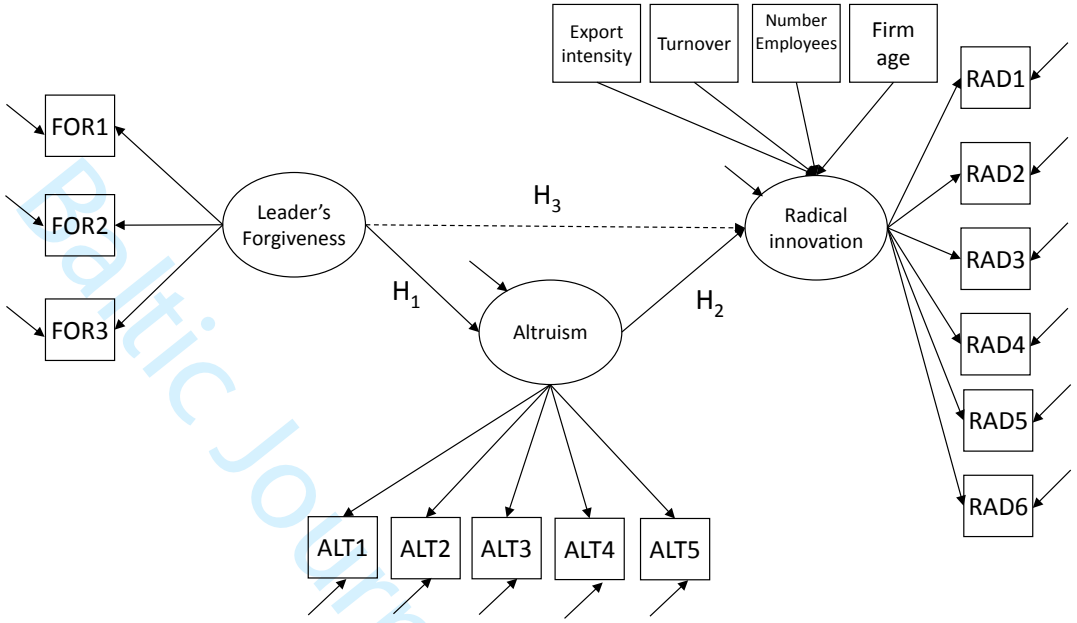


Figure 2. Total effect model

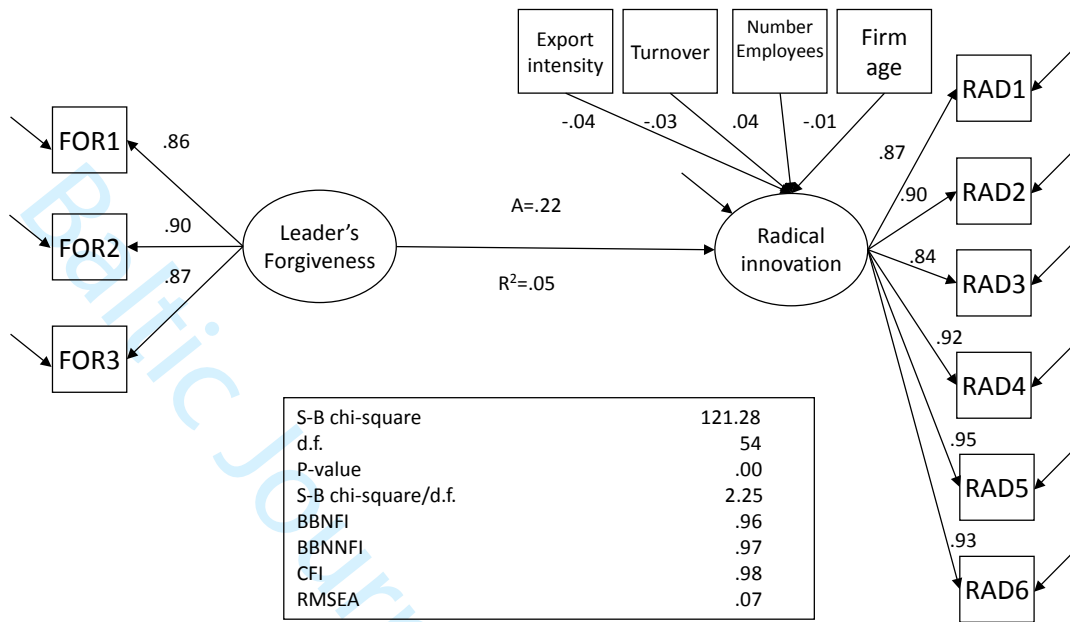


Figure 3. Mediation model

