

The Stimulus-Organism-Response (S-O-R) Paradigm as a Guiding Principle in Environmental Psychology: Comparison of its Usage in Consumer Behavior and Organizational Culture and Leadership Theory

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Abstract: The Stimulus-Organism-Response (S-O-R) paradigm developed by Mehrabian and Russell in 1974 is a guiding principle of environmental psychology theory and transferred from consumer behavior to organizational behavior and leadership studies. The S-O-R model suggests that an organism's internal feelings or Behavior (person) are caused by the external environment (stimuli). This internal processing of the activation can be conscious or unconscious and includes perceptions and environmental interpretations that influence someone's feelings. This influence further triggers an emotion that leads to a response and decision-making. The S-O-R paradigm is a leading concept in multiple global management theories and is, therefore, a model mainly developed and used in various research fields. This paper presents an analysis in the form of a scoping literature review of prior and current research dimensions of the S-O-R model in branding and consumer behavior theory. It compares the usage of the model in branding theory to the usage in organizational Behavior and leadership theory. Besides a summary of similarities of the same model used in both research fields, three main differencing correlations and characteristics have been developed and described. The main differencing factors are the motivation and aim of usage of the model itself, the process and relation of the stimuli-organism-reaction stages, and certain moderating variables and influencing factors throughout the decision-making process, such as marketing, branding on the one hand or leadership and organizational culture on the other hand.

Keywords: Consumer Behavior, Stimulus-Organism-Response, Organizational Culture, Leadership Styles, Decision-Making

1. Introduction

The Stimulus-Organism-Response (S-O-R) paradigm developed by Mehrabian and Russell in 1974 suggests that internal feelings or Behavior of an organism (person) are caused by the external environment (stimuli). This internal stimulus processing can be conscious or unconscious, including perceptions and environmental interpretations that influence someone's feelings and decisions. This influence further triggers an emotion that leads to a response (Mehrabian & Russell, 1974).

The S-O-R model is often used in environmental psychology theory since the model helps to understand the reasons behind a person's Behavior (Mehrabian & Russell, 1977). The S-O-R paradigm is, moreover, a guiding principle in various global management theories, and it is, therefore, a model primarily developed and used in multiple research fields (Parkinson & Turner Schenk, 1980). In leadership theory, the S-O-R theory is a framework that explains how leaders influence the Behavior and performance of their followers. Stimulus refers to the external factors that trigger a reaction

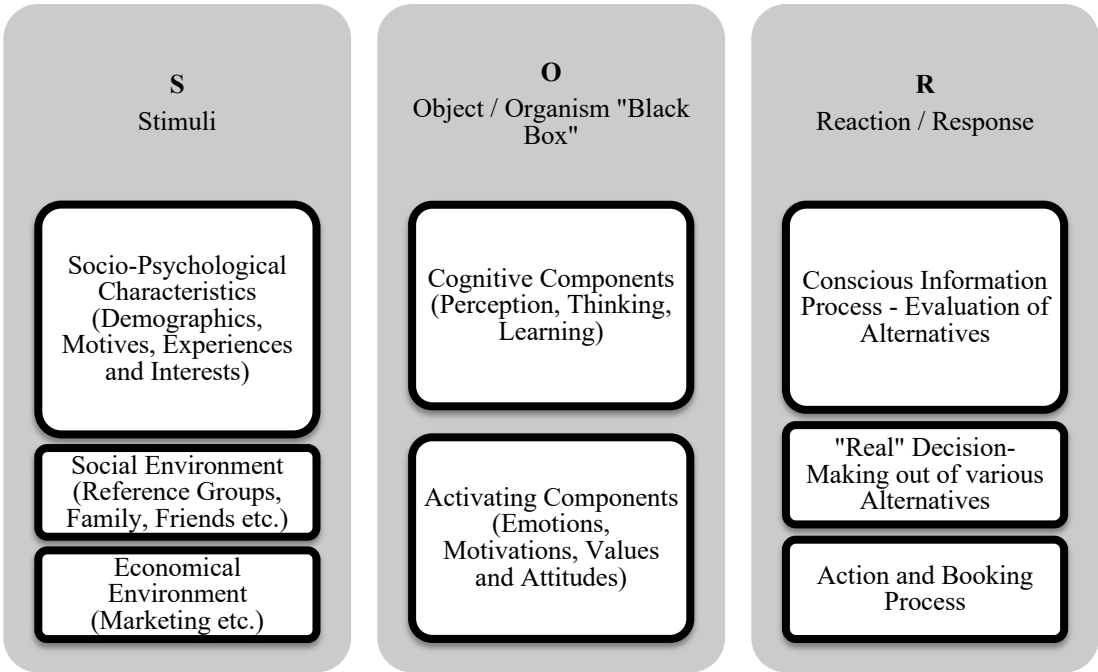
from the follower. Organism refers to the internal factors that mediate the reaction, such as the follower's personality or motivation. Response refers to the outcome of the reaction, such as the follower's performance or satisfaction. This paper analyzes prior research dimensions of the S-O-R model in branding theory and consumer behavior. It compares the usage of the model to the usage in organizational Behavior and leadership theory. This paper aims to extend the knowledge of the Stimulus-Organism-Response (S-O-R) paradigm in the form of a scoping literature review and to compare usage in various research fields, including the investigation of similarities.

2. Literature Review

One of the most used and basic behavioral scientific decision-making models is the black-box model, which deals with decision-making's cognitive aspects (Freyer, 2011, pp. 104-107). One model, which is derived from the black-box approach of decision-making, is the S-O-R model. This structural model examines three main terms: the Stimuli, the Object/Organism, and the individual Reaction/Response. This model aims to examine the origin and formation of decisions and identify consumers' psychological and mental thought processes (Bieger, 2006, pp. 101-110). The S-O-R model divides the concept of a person's involvement into three types and reveals that the environment is a stimulus (S), which consists of a series of signs that cause a person's internal evaluation (O) and are said to cause and generate two types of behavioral responses (R): approach or avoidance (Mehrabian & Russell, 1977; Meffert et al., 2008, pp. 100ff). The three main stages of the S-O-R model are (cf. Decrop, 2006, p.29; Freyer, 2011, p. 107; Bieger, 2006, p. 101):

- **Stimuli:** External and internal information and inputs stimulate someone to do/decide/buy something. These stimuli are influences from both social and marketing environments and the consumer's socio-psychological characteristics (demographics, experiences, interests, and motives).
- **Object / Organism:** These inputs create activating and cognitive constructs; thus, an awareness set of a product and decision can be further developed. The personal attitude of someone towards the already gained and perceived stimulus plays a significant role in this field and thus may or may not lead to the reaction phase itself.
- **Reaction / Response:** The reaction phase starts with the conscious information processing phase and, thus, the start of the actual decision-making process.

Figure 1: S-O-R-Model



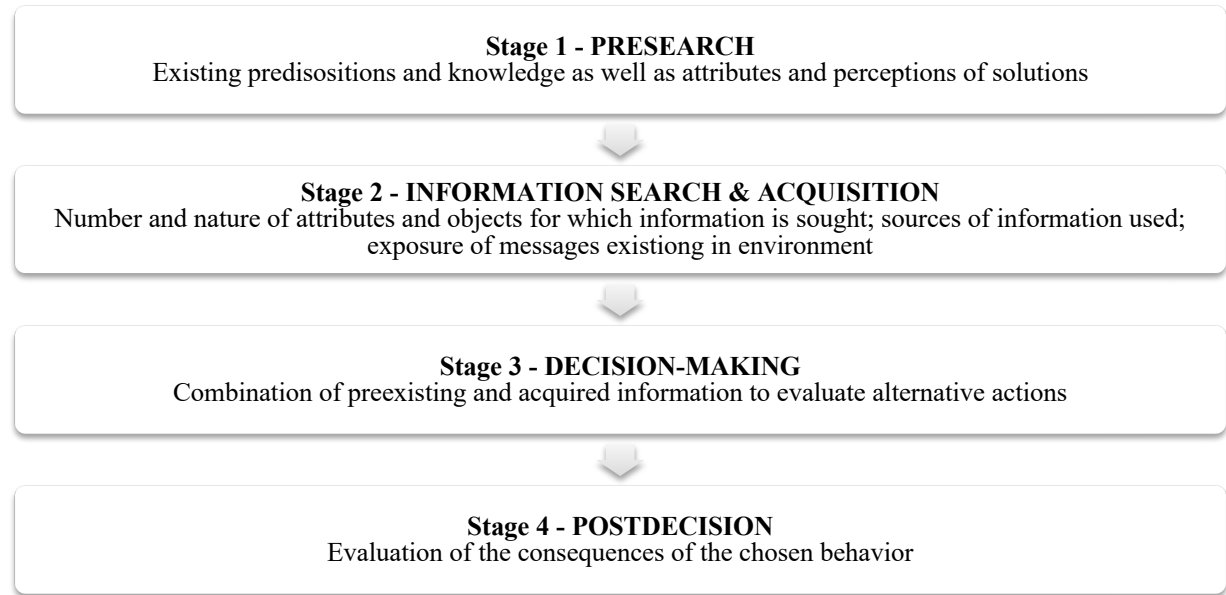
Source: Authors illustration, adapted from Crompton, 1992 in Decrop, 2006, p.30; Freyer, 2011, p.107.

Based on the framework of Figure 1, the model can be transferred to various research fields.

2.1 The S-O-R Paradigm as a Guiding Principle of Purchasing Behavior

Established on the classical neo-behaviorist S-O-R paradigm of learning theory, explained by Mehrabian & Russell in 1974, the researchers Houston and Rothschild re-developed the paradigm in 1977 with a clear focus on consumer involvement and purchasing Behavior as well as decision making. Houston and Rothschild divided the multidisciplinary **concept of consumer involvement** into **three types and four decision-making stages** (Parkinson & Turner Schenk, 1980). Houston and Rothschild hypothesized that the complexity of decision-making processes (to be labeled as “**Response Involvement**”) is a function of the **situation** (“Situational Involvement”) and the individual's experience (Enduring Involvement) while being mediated by **communications** stimuli (Houston & Rothschild, 1977, pp. 3-4). They determined these influencing factors within a decision process modeled in four stages. The first stage is about research and refers to existing knowledge and experiences that a consumer brings into the situation. This knowledge and existing predisposition lead to active or passive behavior for the second stage, namely information search and acquisition. The information acquired, combined with the prior knowledge, results in decision-making and an evaluation in the form of a post-decision phase. The discrepancy between expected and actual behavioral outcomes is mediated by involvement (Houston & Rothschild, 1977, pp. 4-5).

Figure 2: Consumer Decision Process



Source: Authors illustration, based on Houston & Rothschild (1977).

Kroeber-Riel and Weinberg (2003) translated the three types of involvement and the process of Houston & Rothschild into marketing-related stages. They integrated the particularities of brand stimuli, intervening processes, and purchasing Behavior, as summarized in Figure 3.

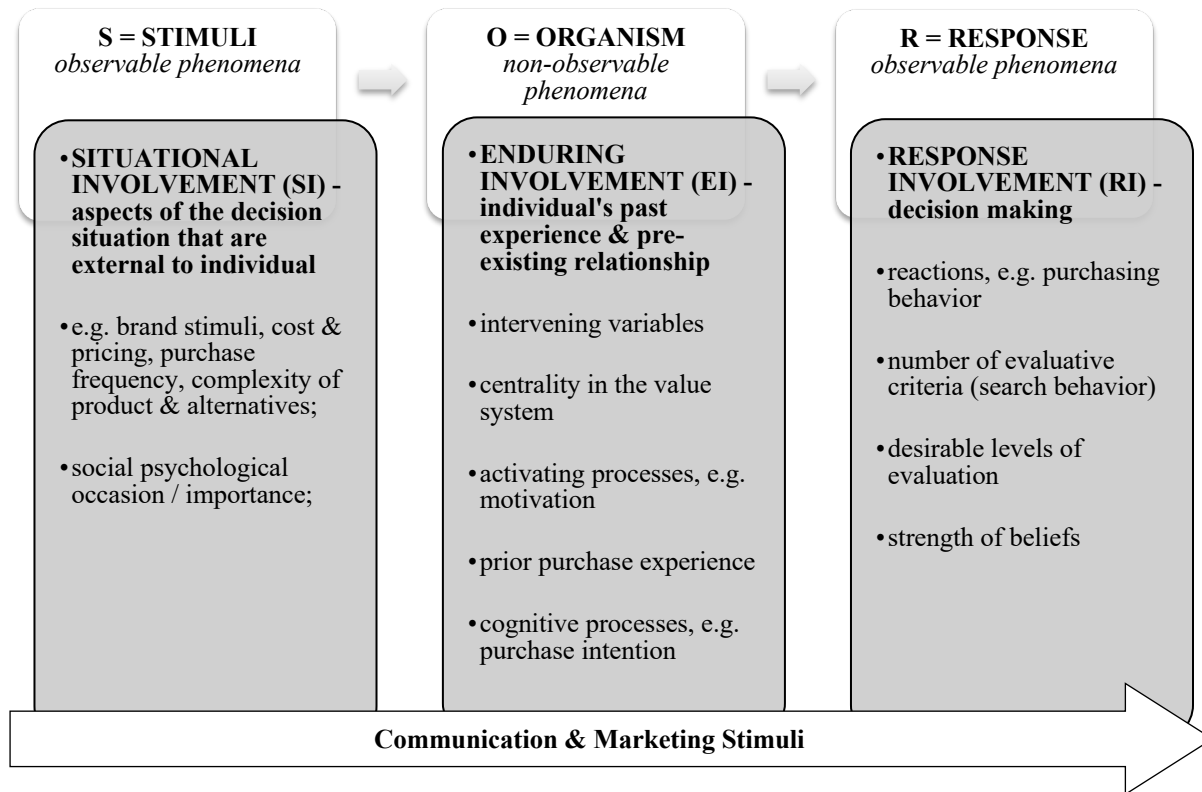
Kroeber-Riel and Weinberg (2003) moreover developed the theory that motivation and intention to purchase a good or service are activated due to the individual exposure to external occurrences of brand stimuli dimensions combined with an existing consumer's knowledge about a brand. Intervening variables, such as perceived norms, attitudes, impressions, and the image of the brand, form the consumer decision (Kroeber-Riel & Weinberg, 2003, p.30).

Trommsdorff and Teichert (2011) indicate that internal and non-observable instances mediate the relation between a stimulus and subsequent processes. They moreover state that the cognitive formation of (purchase) intention is based on moderating effects such as perceived norms and personal attitudes. This theory indicates that the image of a brand, products or services, and social attitudes are central influencing factors in S-O-R models. This leads to the prioritization and importance of brand knowledge in consumer behavior theory (Trommsdorff & Teichert, 2011, pp. 127–145).

As most of these recent models and research theories of the S-O-R paradigm explain, an observable stimulus (S) leads to activation and an interplay with existing knowledge about the source of the stimulus (O). It leads to a specific intended and actual consumer behavior (R). In consumer and purchasing behavior, the factor of **brand knowledge**,

which is defined and consists of the two components of brand awareness and brand image (Keller, 1993), plays a crucial role in using S-O-R models. Keller states, "Perhaps a firm's most valuable asset for improving marketing productivity is the knowledge created about the brand in consumer's minds" (Keller, 1993, p. 2). The sum of associations linked to a brand leads to multidimensional impressions and the formation of an image towards a brand, which consequently frames a consumer's attitude about the source of the stimulus (Kroeber-Riel & Weinberg, 2003, p. 198; Foscht & Swoboda, 2009, 190ff).

Figure 3: Neo-Behaviorist S-O-R model



Source: Authors illustration, adapted f. Houston & Rothschild 1977 and Kroeber-Riel & Weinberg, 2003, p.30.

2.2 The Impact of the S-O-R Theory in Organizational Culture and Leadership

The S-O-R(-C) theory in the research field of Organizational Culture and leadership is based on the theory and idea of Mehrabian and Russel of 1974 and focuses on social motivation and the two types of behavioral responses (R) – approach or avoidance (Gable, 2006):

- **Approach theory:** People approach environments that make them happy and comfortable. For example, an employee wants to continue working in an organization with the best interests in mind because it creates a pleasant experience.
- **Avoidance theory:** People tend to avoid environments and settings that foster unhappiness. Personal control over situations, the range of responsibilities, workload, and work-life balance influence one's behavior toward the environment.

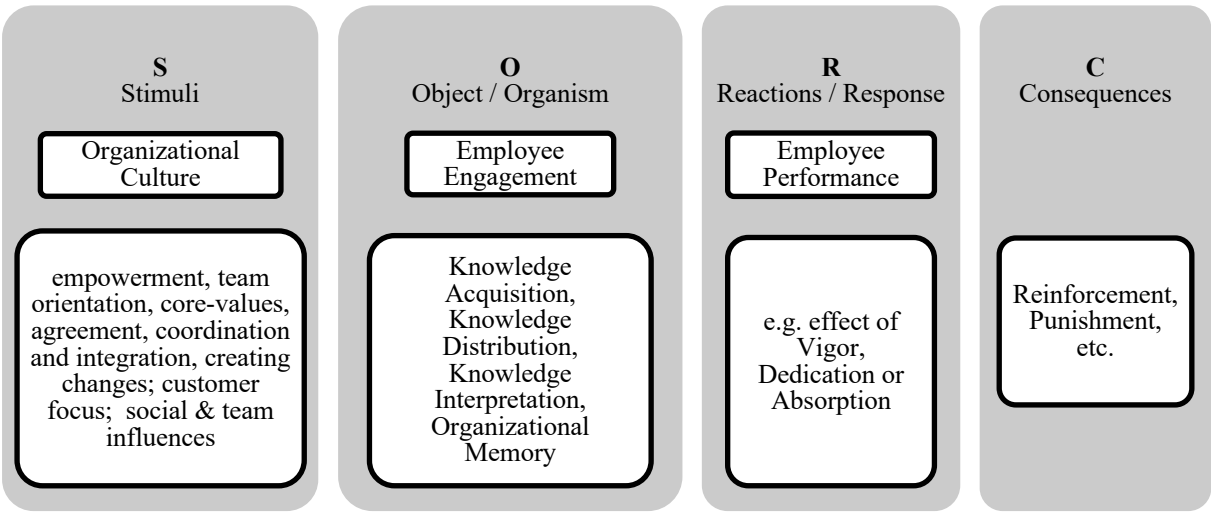
The approach and avoidance distinction has been heavily investigated, and various researchers (Gable, 2006 or Gable & Impett, 2012) state that the relationship between humans is formed by particular approach and avoidance motives and thus peoples' social goals and tendencies to approach incentives and avoid threats (Gable & Impett, 2012, p.4).

Adopted from the environmental psychology theory, the S-O-R framework within the field of Organizational Culture and leadership does not focus on the influence of an image of a brand and product on consumer behavior and purchasing intention but on the relationship between single effects and their dependencies between integrated individuals (Hasan et al., 2021). Another main factor adopted in this stimulus-response research is integrating the function of consequences ("C") and, thus, developing from the S-O-R to S-O-R-C theory. Following the ideas of Skinner's **theory of learning**

(e.g., Skinner 1966, 1969), systematic behavior modification must start with consequences such as rewards and punishment. Within this classical leadership approach, it was the leader's disposal to increase desired and reduce undesired Behavior by offering certain rewards or threats. This approach is regarded as limited to observable Behavior and has been criticized due to the lack of integration of cognitive aspects. Therefore, a new social learning theory integrating social and mental aspects and the factor of emotional intelligence as a variable has been developed. Those variables lead to consequences that a specific Behavior might cause (cf. Winkler, 2010). The intervening variable of **social influence** is a vital part of the S-O-R-C model in the research field of Organizational Culture and leadership (Laato et al., 2020). Social power and influence are often integrated as a stimulus in the S-O-R-C framework. Especially in a working team construct, humans are likely to change their behavior and accept influence from their perceived social in-group (Kelman, 1958; Bastian et al., 2012; Neal and Chartrand, 2011, cited in Laato et al., 2020).

The following relations can examine the use of the S-O-R(-C) model: the stimulus (S = Organizational Culture) affects the organism (O = Employee Engagement). The response (R = Employee Performance) is the effect of the organism, which might lead to long-lasting positive or negative consequences for the company (C = Consequences) (Hasan et al., 2021).

Figure 4: S-O-R-C framework in Organizational Culture



Source: Authors illustration, based on Hasan et al., 2021, p.239 and Laato et al., 2020.

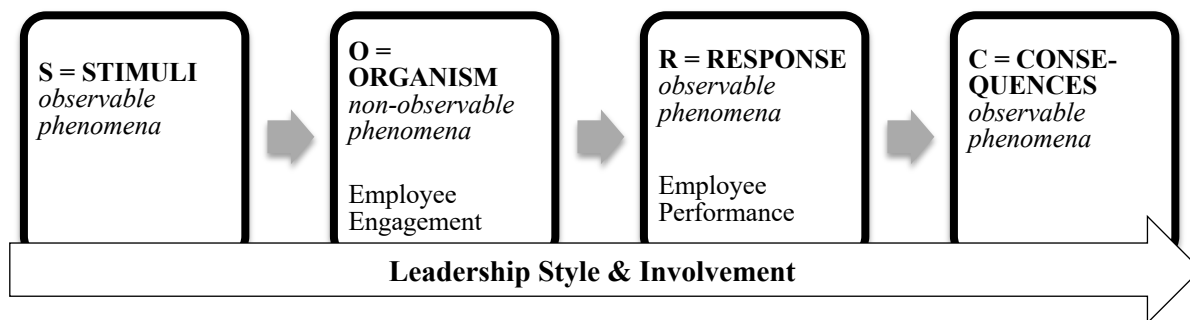
Kazimoto (2016) stated that corporate and organizational culture is related to employee engagement. When the organizational culture matches employees' expectations, employee engagement will be high and vice versa. This relation might produce positive reactions and performances (Hasan et al., 2021, p. 243; Robbins & Judge, 2017). Employee comfort and a positive social identity towards an organization are crucial for employee engagement. They can be supported via an open organizational culture, encouraging work environments, and well-developed communication between employees and leaders and within the team (Kazimoto, 2016; Niermeyer, 2016).

Corporate culture can be compared to a brand image in consumer behavior theory, including constructs like a clear vision and clear values, which guide the employees in their daily activities. This culture/brand can or cannot be supported by employees, leading to either positive or negative performance and consequences (Hasan et al., 2021). Moreover, Obrenovic et al. (2022) integrated the influence of knowledge sharing and the personality trait of conscientiousness in the research field. They explained the relationship between personality and attitude in the context of knowledge sharing and how leadership and distinct management initiatives are to be developed to suit these factors. The intensification of knowledge exchange could suit the individual in the leadership domain, including staffing decisions, work organization, and incentive systems.

Further factors leading to reactions of the organism, such as the employee's reasons for personal careers, including aspects of image, prestige, self-actualization, getting recognition, and other considerations, are integrated into the S-O-R model. One of the most important influencing stimuli is **leadership style and involvement**. Leaders can use corporate culture

and the whole employee empowerment process as tools to affect performance, increase teamwork capabilities, and motivate organizational members to perform well for organizational goals. The influence of leadership style and involvement need to be integrated as moderating variables in this S-O-R(-C) theory field and could be investigated in future research (Hasan et al., 2021, p. 244 & Syafii et al., 2015).

Figure 5: Neo-Behaviorist S-O-R-C model incl. Leadership as a moderating variable



Source: Authors illustration, adapted f. Hasan et al., 2021 and Syafii et al., 2015.

As leadership styles were identified as the most important influencing factors in terms of usage of the S-O-R model in the research field of Organizational Culture and leadership, the next sub-chapter takes a deeper look into the various forms and history of leadership.

2.3 Organizational Culture and Leadership Styles

One of the first scientists who studied different leadership styles was psychologist Kurt Lewin. From 1936 to 1940, he studied how leadership behaviors affected employees' productivity and creativity. Based on his experiments, he differentiated three classic leadership styles: democratic, autocratic, and laissez-faire (Franken, 2019, p. 315). Based on the work of Kurt Lewin, Bass (1985) and Dyer (1986) investigated today's most popular leadership styles. The result is an amount of seven identified leadership styles: autocratic, expert, laissez-faire, participative, referent, transactional, and transformational. Most research studies in the S-O-R paradigm have compared the effects of transformational and transactional leadership on the followers' motivation, commitment, and performance. Therefore, the scoping literature review focuses on these two leadership styles.

Transactional leadership is a style of leadership that is characterized by precise rules, structures, and goals. The employee does what the supervisor expects of him. The implemented work is based on the idea of exchange. In his role, the employee acts as a rational decision-maker who follows the path to the goal. Transactionally managed people are remunerated extrinsically. That means primarily through money and opportunities for advancement in the hierarchy (Züger, 2007).

In **transformational leadership**, the focus is on the vision of working together. This means that employees who are led this way pursue their interests (input-output relationship) through their actions and higher objectives. Transformational leadership tries to increase performance by changing the values and goals of the person being led. Kurt Lewin would speak of the cooperative leadership style. Some scholars describe individual support and encouragement as supportive leadership or vision- and mission-oriented, as well as personal and development-oriented (Lang & Rybnikova, 2014).

3. Research Methodology - Materials and Methods

This study aims to determine the factors and variables that differentiate the use of the S-O-R models in two different fields of social and behavioral sciences, namely the field of "Consumer Behavior" on the one hand and "Organizational Culture and leadership" on the other. The first step of this paper was the collection of literature and theory regarding the S-O-R paradigm in the context of the two defined research fields. Therefore, the historical development of the usage of the models and the development of the S-O-R theories throughout the years have been investigated via a scoping literature review to identify, evaluate, and synthesize the existing body of completed and recorded work produced by researchers. The scoping literature review was based on the research interest to investigate similarities and differences between the

usage of S-O-R or S-O-R-C components in Branding Theory and Leadership Theory and accordingly focuses specifically on scientific research, including the topics of decision-making processes, cognitive components of customer-employee behavior, as well as leadership styles. This literature review refers to current research from 2016 to 2023 that addresses current views of both Branding Theory and Leadership Theory regarding the S-O-R model. As a particular criterion, the reference to Organizational Behavior and Decision-Making Processes was highlighted, which is considered an elementary advance in the modern use of both theories, and its importance for future research is emphasized within this article. As a next step, the authors identified five suitable relevant keywords in the first step. The specified keywords are "Consumer Behavior," "Stimulus-Organism-Response," "Organizational Culture," "Leadership Styles," and "Decision-Making." In this way, the sum of over 200 articles was reduced to approximately 30 considered articles. The databases used for the scoping literature review were "Wiley," "Scopus," and "Sage." The selected literature comprises English and German articles and peer-reviewed sources in Business Management and Economics. The authors analyzed the titles and abstracts of the identified sources to ensure their relevance to the investigation. Afterward, the full texts of the remaining seeds were studied, and the relevant data was extracted. Within the final step, the authors assessed the quality and suitability of the extracted data to ensure high quality and relevance.

4. Results

The S-O-R paradigm shows multiple similarities in both research areas by comparing these two research fields. According to the scoping literature review and the various models used by different researchers, the most correlations exist within the non-observable field of the model, the so-called black box and organism stage. The cognitive components, such as an individual's perception towards a product, company, etc., and activating elements, such as emotions, values, and attitudes combined with prior knowledge concerning the brand, product, or organization, are the most influential ones to understand in both fields of research.

4.1 Comparison of Consumer Behavior Theory and Leadership Theory

In **consumer behavior theory**, the S-O-R paradigm is used to understand how consumers process information and make decisions responding to various stimuli and impulses, such as product attributes, prices, brands, advertisements, etc. Marketers can control the stimuli or are uncontrollable by situational, social, or political factors. The organism refers to the internal processes of consumers, such as their attitudes, motives, emotions, perceptions, learning, memory, etc. The response refers to the observable behaviors of consumers, such as buying, using, or communicating about a product or service. The S-O-R paradigm helps marketers design effective marketing strategies and measure consumer satisfaction and loyalty.

In **organizational behavior and leadership theory**, the S-O-R paradigm is used to understand how employees and leaders react to stimuli such as tasks, rewards, feedback, goals, culture, etc. The stimuli can be intrinsic or extrinsic, positive or negative, consistent or inconsistent. The organism refers to the psychological states of employees and leaders, such as their motivation, commitment, engagement, trust, empowerment, etc. The response refers to the performance outcomes of employees and leaders, such as productivity, quality, creativity, innovation, teamwork, etc. The S-O-R paradigm helps managers and leaders create a conducive work environment and enhance organizational effectiveness and competitiveness. One of the applications of the S-O-R paradigm in organizational Behavior is thus to understand how different types of leadership styles affect the followers' reactions and outcomes. Recent studies have compared the effects of transformational and transactional leadership on followers' motivation, commitment, and performance using the S-O-R paradigm (e.g., Bass & Avolio, 1994; Judge & Piccolo, 2004). These studies have found that transformational leadership stimulates followers' intrinsic motivation and identification with the leader and the organization. In contrast, transactional leadership stimulates followers' extrinsic motivation and compliance with the leader and the rules. These different types of motivation and commitment influence the followers' performance and satisfaction.

Further studies in the field of the S-O-R paradigm in leadership theory have compared the effects of clan, adhocracy, market, and hierarchy cultures on the followers' creativity, innovation, and risk-taking using the S-O-R paradigm (e.g., Cameron & Quinn, 1999; Martins & Terblanche, 2003). These studies show that clan and adhocracy cultures stimulate followers' creativity and innovation by providing a supportive and flexible environment. In contrast, market and hierarchy cultures stimulate followers' risk-taking by providing a competitive and structured environment. These types of cultures influence the followers' Behavior and performance.

4.2 Three main differences in the usage of the S-O-R model

In total, the authors identified **three differences and primary constructs** to differentiate the usage of the model, namely (1.) the focus and aim of usages, (2.) the process and relation of the stimuli-organism-reaction stages itself, (3.) the moderating variables and influencing factors throughout the process were identified and illustrated in figure 6.

Figure 6: Comparison of S-O-R model in research fields

Variable	S-O-R in Consumer Behavior & Purchasing Behavior		(-C) in Organizational Culture and Leadership	
	Indicator & Characteristics	Reference	Indicator & Characteristics	Reference
1. Focus and aim of usage	- Insights about Consumer involvement - Understanding of decision-making and purchasing behavior (with a focus on purchasing intention)	Houston & Rothschild, 1977 Kroeber-Riel and Weinberg, 2003 Trommsdorff & Teichert, 2011	- Social Motivation and Behavioral Responses - enhancement of organizational employee performance	Gable, 2006 Kazimoto, 2016
2. Stages, Process & relation of S-O-R	- Process-orientation towards a goal: activation of a certain response - Modeled in clear stages of decision-making. - One step follows another – a linear process. - The post-decision phase is integrated but only for scenario planning	Houston & Rothschild, 1977 Parkinson & Turner Schenk, 1980 Bieger, 2006	- Relationship orientation: Relation between single effects to enhance a more outstanding performance. - Dependencies between individuals. - Theory of learning: additional phase of “C” = Consequences	Skinner, 1966 & 1969 Kazimoto, 2016
3. Moderating Variables and influencing factors	- Existing Brand knowledge (brand awareness and image) - Marketing and communication activations - Social influences and environment (family, friends, influencers, etc.)	Keller, (1993). Kroeber-Riel and Weinberg, 2003 Trommsdorff & Teichert, 2011	- Leadership style - Leadership involvement - Social influences (social in-group, team, colleagues)	Hasan et al., 2021 Syafii et al., 2015 Laato et al., 2020

Source: Authors illustration, 2023.

Whereas the S-O-R paradigm in consumer and purchasing behavior follows a transparent process of single steps (e.g., four stages of decision-making from Parkinson & Turner Schenk, 1980), the S-O-R(-C) theory in Organizational Culture and Leadership is built on the theory of learning and thus focuses on the relation between the single effects of the S-O-R(-C) theory. One main field of difference is the influencing and moderating variables, as already stated in Figure 3, including the effect of "Marketing and Communications," and in Figure 5, including the impact of "Leadership Styles and Involvement."

5. Discussion

The S-O-R paradigm in leadership theory is a valuable tool to analyze how leaders can shape the Behavior and performance of their followers by manipulating the stimulus and understanding the organism. However, it is essential to note that the S-O-R paradigm is not a deterministic model that assumes a linear and causal relationship between the elements. Instead, it is a dynamic and interactive model that recognizes the complexity and variability of human behavior in organizational settings.

Limitations regarding our research arise regarding the availability of sources. Finding relevant sources can be difficult, especially when the topic is particular, or the subjects are new or emerging. Furthermore, language barriers contribute to the research limitation, as just English and German- sources have been used. Moreover, it can be challenging to assess the articles' quality and ensure they are relevant to the investigation. In addition, the research results may be biased due to bias in the selection and scoring of the items and the keywords selected. Additionally, lacking an everyday basis may result in questionable comparisons or generalizations.

Further research could continue the investigation of the correlation of the two models and include hypothesis creation and testing as well as empirical examinations within one of the two research fields to gain more actual data and support particular insights. Through further research on the existing gaps, a more profound understanding will be reached and could contribute to the general examination and study of environmental psychology in the long term.

6. Conclusion

This paper presents a scoping literature review and analysis of prior research dimensions of the S-O-R model in consumer behavior and branding theory compared to the usage of the model in organizational Behavior and leadership theory. Although the models show high similarities in both research fields within the topic of "Organism," including the non-observable black-box phenomena and non-observable dimensions with cognitive and activating components of employees and consumers, the comparison of the two research fields exposed some differences regarding the usage of the model. Therefore, three differences have been defined, and the indicators and characteristics have been correlated according to the results of the scoping literature review within both usage fields.

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