



Behavioral Sciences in the Study of Community Supported Agriculture (CSA)

Ciências Comportamentais no Estudo das Comunidades que Sustentam a Agricultura (CSA)

Ciencias del Comportamiento em el Estudio de la Agricultura Apoiada por la Comunidad (CSA)

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Abstract

Community Supported Agriculture (CSA) is an important Alternative Food Network (AFN) in which consumers financially support small family farmers, sharing the risks and benefits of food production. This type of community is governed by rules based on collective and individual principles and values that produce, as an aggregate product, food security, environmental preservation, and income for small family farmers. CSAs are a food production and consumption model that directly connects farmers and consumers and promotes family farming, the local economy, sustainable agricultural production, and pro-environmental and prosocial behavior patterns. Considering the importance of CSAs for environmental sustainability and social justice and as a way of understanding the factors that promote these behaviors, a systematic review of the literature was carried out to identify studies that investigated actions by CSA members related to pro-environmental, prosocial, or health-related concerns, with (a) psychology as a theoretical-methodological approach or (b) identifying other areas of science interested in behavioral issues related to its members. While psychology studies on the behavior patterns of CSA members are rare, this aspect arouses interest in the multidisciplinary scientific community, as it stimulates and reinforces important and specific behaviors in the context of food and the preservation of the planet.

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Keywords: Community Supported Agriculture. Behavior Analysis. Cooperation. Metacontingencies. Climate Change. Sustainable Agricultural Practices.

Resumo

As Comunidades que Sustentam a Agricultura (CSA) são uma importante Rede Alimentar Alternativa (AFN) na qual os consumidores apoiam financeiramente pequenos agricultores familiares, compartilhando os riscos e benefícios da produção de alimentos. Esse tipo de comunidade é governada por regras baseadas em princípios e valores coletivos e individuais que produzem, como produto agregado, segurança alimentar, preservação ambiental e renda para pequenos agricultores familiares. As CSAs são um modelo de produção e consumo de alimentos que conecta diretamente agricultores e consumidores e promove a agricultura familiar, a economia local, a produção agrícola sustentável e padrões de comportamento pró-ambientais e pró-sociais. Considerando a importância das CSAs para a sustentabilidade ambiental e a justiça social e como forma de compreender os fatores que promovem esses comportamentos, foi realizada uma revisão sistemática da literatura para identificar estudos que investigaram ações de membros da CSA relacionadas a preocupações pró-ambientais, pró-sociais ou relacionadas à saúde, tendo (a) a psicologia como abordagem teórico-metodológica ou (b) identificando outras áreas da ciência interessadas em questões comportamentais relacionadas aos seus membros. Embora estudos de psicologia sobre os padrões de comportamento dos membros da CSA sejam raros, esse aspecto desperta interesse na comunidade científica multidisciplinar, pois estimula e reforça comportamentos importantes e específicos no contexto da alimentação e da preservação do planeta.

Palavras-chave: Comunidades que Sustentam a Agricultura. Análise do Comportamento. Cooperação. Metacontingências. Mudanças Climáticas. Práticas Agrícolas Sustentáveis.

Resumen

La Agricultura Apoyada por la Comunidad (CSA) es una importante Red Alimentaria Alternativa (RAA) en la que los consumidores apoyan económicamente a pequeños agricultores familiares, compartiendo los riesgos y beneficios de la producción de alimentos. Este tipo de comunidad se rige por normas basadas en principios y valores colectivos e individuales que producen, como producto agregado, seguridad alimentaria, preservación del medio ambiente e ingresos para los pequeños agricultores familiares. Las CSA son un modelo de producción y consumo de alimentos que conecta directamente a agricultores y





consumidores y promueve la agricultura familiar, la economía local, la producción agrícola sostenible y patrones de comportamiento proambiental y prosocial. Considerando la importancia de las CSA para la sostenibilidad ambiental y la justicia social, y como una forma de comprender los factores que promueven estos comportamientos, se realizó una revisión sistemática de la literatura para identificar estudios que investigaran acciones de los miembros de las CSA relacionadas con preocupaciones proambientales, prosociales o relacionadas con la salud, con (a) la psicología como enfoque teórico-metodológico o (b) identificando otras áreas de la ciencia interesadas en cuestiones de comportamiento relacionadas con sus miembros. Si bien los estudios psicológicos sobre los patrones de comportamiento de los miembros de la CSA son escasos, este aspecto despierta interés en la comunidad científica multidisciplinaria, ya que estimula y refuerza comportamientos importantes y específicos en el contexto de la alimentación y la preservación del planeta.

Palabras clave: Agricultura Apoyada por la Comunidad. Análisis del Comportamiento. Cooperación. Metacontingencias. Cambio Climático. Prácticas Agrícolas Sostenibles.

Introduction

Community Supported Agriculture (CSA) originated in the 1970s in Japan when a group of women concerned about the quality of the food they consume sought out small local rural producers to support them in exchange for organic and chemical-free food pesticides for their families (Henderson & Van En, 2007). After decades, communities are present in several countries, based on collective and individual principles and values that produce, as an aggregate product (Glenn et al., 2016), food security, environmental preservation, and income for small farmers. Recognized by the Food and Agriculture Organization of the United Nations (FAO) as an important Alternative Food Network (AFN), CSAs are characterized as a form of regional partnership and Local SolidarityBased Partnerships for Agroecology (LSPAs) and can also be defined as a social technology based on the principles of solidarity, community and collaborative economy (Dagnino et al., 2004).

In this context of environmental preservation, CSAs have gained strength worldwide and play an essential role in reducing carbon emissions on the planet (Wegren, 2021), promoting biodiversity, and reconnecting people with the production of the food they consume. The recovery of degraded areas and organic or agroecological production are among





the fundamental operating principles of CSAs across the planet (Henderson & Van En, 2007). The model, based on the principles of agroecological agriculture and environmental preservation, is an innovative alternative to conventional agricultural production methods. Communities are composed of small family farmers and consumers who make a mutual commitment to the values and social rules advocated by communities over generations (i.e., cultural transmission; Glenn et al., 2016), and in several countries, for this reason and commitment, they are called co-farmers.

Research into human behavior in community-based participatory movements to preserve the environment still requires further study (Biglan et al., 2020; Freitas Lemos et al., 2019; Gelino et al., 2021; Molina et al., 2019). In the case of CSAs, studies have focused on productive issues, such as land management, agricultural practices, productivity, or other effectiveness indicators, as the object of analysis (Brown & Miller, 2008; Darolt et al., 2016; King, 2008). On the other hand, more recently, the behavior of CSA members (i.e., farmers and co-farmers) has been the subject of interest in several areas of science (Christensen et al., 2018; Galt, Bradley et al., 2019; Galt, Kim, et al., 2019; Opitz et al., 2019) but has been little explored by behavior analysts or even by behavioral community psychology.

Theoretical Framework

2.1 Pro-environmental and Prosocial Behavior in Agriculture

Human behavior has been associated with critical issues related to the preservation of the environment, the increase in greenhouse gas emissions, and the ability to mitigate or magnify the problems caused by their consequences (Bonner & Biglan, 2021; IPCC, 2023). According to Lange and Dewitte (2019), pro-environmental behavior can be understood as a class of behaviors that benefit the natural environment (e.g., recycling waste) or the omission of behaviors that harm the natural environment (e.g., avoiding the use of fossil fuels). In agricultural practices, we can relate pro-environmental behavior to behaviors adopted in land management, which preserve the environment and its diversity, such as not using pesticides and chemical inputs that contaminate water, soil, and air. Likewise, pro-environmental behaviors are practices that avoid deforestation and other activities that prevent the degradation of the environment and the local environment in which one lives. In food consumption patterns, we can associate pro-environmental behavior with choices related to





agricultural production practices that guarantee the preservation of the environment.

Psychology and behavioral economics researchers have investigated prosocial, cooperative, or altruistic behaviors for decades (Frey & Meier, 2004; Brown & Rachlin, 1999; Penner et al., 2005; Pfattheicher et al., 2022; Rachlin, 2002; Rachlin & Locey, 2011). In the context of interactions in CSAs, prosocial and cooperative behavior is stimulated by internally disseminated values and principles and, under the control of the individual and its interlocked behavioral contingencies in metacontingencies that result in aggregate products (Glenn et al., 2016), which goes beyond the limits of the communities themselves (e.g., to environmental preservation).

Concern for the environment and the consequences of human behavior have motivated investigations into the antecedents that evoke pro-environmental and prosocial behaviors related to cooperation in various everyday life situations, including management practices used in agriculture (Gelino et al., 2021). Some of this research lists the factors that influence pro-environmental behaviors, such as mitigation and the ability to adapt to climate change (Biglan et al., 2020), and others highlight the importance of expanding international cooperation and science to achieve better results in reducing environmental damage (Zhang & Liang, 2020).

UN Secretary-General António Guterres describes the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) as an “atlas of human suffering and proof of the failure of climate leadership.”⁵ Chapter five of the IPCC Sixth Assessment Report⁶ addresses agriculture, forestry, fisheries and aquaculture, food production capacity, solutions, and possible adaptive limits. This chapter argues that production systems based on environmental preservation, such as organic agriculture and integrated systems (crops, livestock, and forests), already represent significant resources or technologies for mitigation and adaptation. However, systems based on broader conservation principles, such as adopting organic and agroecological practices, are more effective at preserving animal and plant biodiversity, strengthening and maintaining traditional communities and small farmers, and valuing the development of local food systems.

⁵ <https://news.un.org/en/story/2022/02/1112852>

⁶ <https://www.ipcc.ch/report/ar6/wg2/chapter/chapter-5/>





2.2 Behavioral Sciences in Communities and Environmental Preservation

According to Trickett (2009), the concept of community, which developed in sociology and anthropology, also laid the foundation for developing community psychology, which seeks to understand individuals' behavior in their sociocultural context. In general, we can say that the term community can include different ways of living collectively; however, in this study, we consider the term community as Bonner and Biglan (2021, p. 107) conceptualized it: a group of people who live in the exact geographic location (i.e., neighborhoods and cities) and who share common values, interests or objectives. Similarly, Ardila Sánchez et al. (2020) present communities as systems in which people are connected by networks of interlocked behavioral contingencies (Glenn et al., 2016), which keep them cohesive.

Community research and action are objects of study shared by several disciplines, such as behavioral sciences, community psychology, public health, and anthropology (Fawcett, 2021). Currently, behavior analysis addresses community issues through Culturo-Behavior Science (CBS) and the analysis of complex social systems (Borba, 2019; Couto, 2019; Cran et al., 2023; Malott & Glenn, 2019; Molina et al., 2019; Skinner, 2005).

Biglan et al. (2020) stated that community interventions effectively promote pro-environmental behaviors that can contribute, for example, to reducing greenhouse gas emissions. However, climate warnings do not seem to be enough, and behavioral scientists seek to understand why climate communication has not engaged humanity in the search for the adoption of environmental and human preservation behaviors (Alavosius et al., 2022; Gelino et al., 2023; Pietras, 2022). Bonner and Biglan (2021, p. 107) warned of the need to 'rebooting' behavioral science to contribute to strategies for reducing carbon emissions and stated that "climate change is fundamentally a problem of human behavior."

It is necessary to find ways to promote significant changes in human behavior to preserve the environment and reduce social and economic inequalities. In this sense, analyses that use a behavioral science perspective have been necessary for proposing interventions and developing strategies that can cease or reverse the cumulative adverse effects (i.e., macro behaviors; Glenn et al., 2016) that human behavior has been causing over generations and that compromise, very quickly, human survival on earth.

Research into human behavior in agriculture has expanded in the behavioral sciences, mainly due to concerns about the effects of climate change and environmental damage





(Bonner & Biglan, 2021). Government initiatives can support projects and programs encouraging agricultural practices contributing to environmental recovery and conservation. (e.g., Nogueira Júnior et al., 2022; Tosto et al., 2023). However, research on what motivates consumers and farmers to engage in environmental preservation through dietary patterns and agricultural management practices is still rare. This article explores the behavioral patterns of CSA members (i.e., consumers/co-farmers [CSA members] and farmers) through a systematic literature review. The focus is investigating pro-environmental behaviors and prosociality and influencing consumption choices based on health-related concerns. This study employs psychology as a theoretical-methodological approach to identify other areas of science interested in behavioral issues related to CSA members.

Method

A systematic literature review was carried out following the protocol established by the PRISMA methodology (Page et al., 2021) to identify studies that have investigated the behavioral patterns of CSA members related to pro-environmental and prosocial behaviors or motivated by health-related concerns, with (a) psychology as a theoretical-methodological approach or (b) other areas of science interested in behavioral issues related to their members.

With this objective, the database for the systematic review was defined. The Periodical Portal of the Brazilian Federal Agency for Support and Evaluation of Graduate Education (CAPES)⁷ was chosen because it includes more than 39 thousand full-text journals in its databases and 396 peer-reviewed databases, such as Scopus, Scielo, Springer, Redalyc, and Web of Science. The systematic review was conducted in three stages: identification, screening (selection of articles and eligibility), and description of results (inclusion of selected articles).

3.1 First Phase of Review

The identification of articles began with a search in the periodical portal database between the 21st and 25th of August, 2023. As search criteria, peer-reviewed articles were defined in the last five years, with the exact expression “community supported agriculture” or

⁷ <https://www-periodicos-capes-gov-br.ez103.periodicos.capes.gov.br/>





“community-supported agriculture” and its corresponding terms in Portuguese (i.e., “comunidades que sustentam a agricultura” or “comunidade apoiada pela agricultura”) in the “title” field or the “subject” field, as an exact expression, to ensure that the search only included articles that specifically dealt with CSAs. Narrowly published articles from peer-reviewed journals were selected.

The selection of articles from the most recent publication to the oldest was defined to facilitate the search and better organize the results found. The initial search returned 351 articles in the database, in which a detailed reading of the title and abstract was carried out to identify any behavioral investigation carried out by psychology as a science or carried out by other areas of science interested in behavioral issues related to members of a CSA.

3.2 Second Stage of Review

Two screening phases and a reassessment phase. In the first screening phase, articles were selected according to the inclusion criteria with empirical investigations related to the behaviors of CSA members on (a) participation and engagement in communities, (b) preservation of the environment, (c) values or principles related to social concerns (e.g., solidarity; responsibility), economic (e.g., financial support and contribution to the small producer's income) and environmental concerns (e.g., preservation, sustainability, conscious consumption) and (d) interests related to health that determine the choice of healthy foods produced without pesticides and chemical inputs. Texts could be published in any language as long as the full text was available.

The exclusion criteria were articles that (a) addressed related topics that eventually cited CSAs in some part of the text or in which the search terms were present in their bibliographic references. In this case, they dealt, for example, with topics in which CSAs are naturally included but unrelated to investigations into the behaviors of their members, such as Climate Smart Agriculture (CSA), Alternative Food Networks (AFN), urban and periurban agriculture, community gardens, solidarity agriculture systems, Critical Sources Areas (CSA), food insecurity, community gardens, community-supported fisheries, or even agricultural production practices, in which the authors mention CSAs as an example of adoption; and (b) articles on eating patterns, diet quality, nutrition, food waste, health research that investigated results of clinical examinations or similar related to the health of members of a CSA. Therefore, the exclusion criterion was articles unrelated to the consumer's decision (i.e., co-





farmer or CSA member).

3.3 First Screening Phase of the Second Review Stage

Overall, 351 articles were analyzed by reading the title and summary, 203 of which were excluded. Thus, 148 articles were re-evaluated based on additional reading of the introduction and methodology.

3.4 Second Screening Phase of the Second Review Stage

For further analysis, the 148 articles were transferred to an Excel spreadsheet with columns containing the title of the article in English and Portuguese, the abstract (in English) and the summary (in Portuguese), the objective of the study, the bibliographic reference, the academic training and the bond of the authors (field of science), the year of publication and the magazine in which it was published. This phase constituted the second screening phase, in which all 148 articles were accessed in full, as the researchers had broad access to the databases in which the articles were available. As the authors' training and connection to areas of science were analyzed and articles that dealt with behavior patterns were verified, the lines in the spreadsheet of articles that did not meet the inclusion criteria were excluded, resulting in 114 excluded articles and 34 articles selected that met the inclusion criteria.

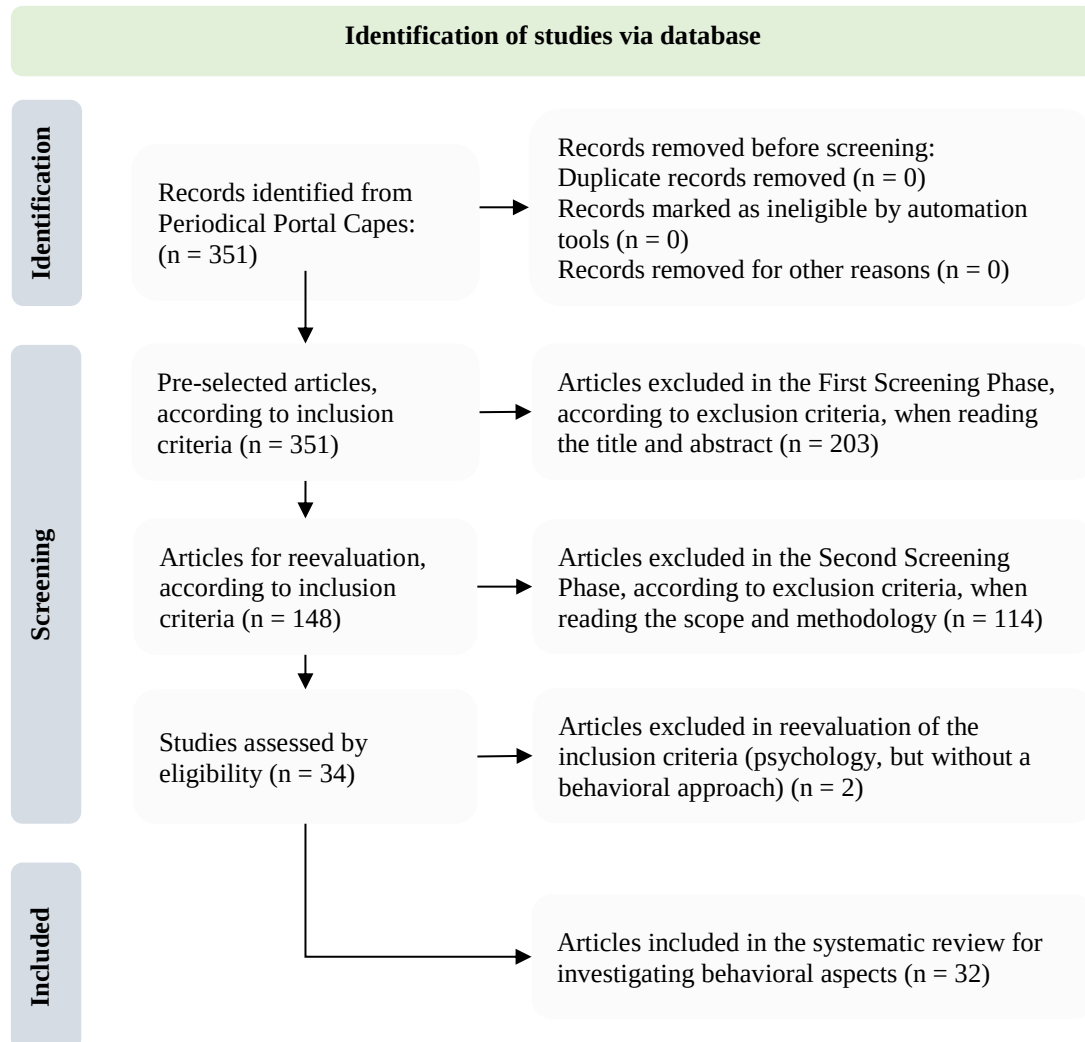
In this final phase, which consisted of a more in-depth analysis of the eligibility of studies that would be included in the discussion of this systematic review, it was necessary to decide on the inclusion or exclusion of two articles in which a Brazilian researcher, a psychologist, participated as coauthor of two articles. However, one addressed the logistics and marketing of products in CSAs, and the other used network analysis from an organizational perspective to investigate how inter-organizational networks of sharing and commitment can influence the maintenance and development of the production model of CSAs in the Federal District. We understand that even with the participation of a psychologist, there was no investigation into the specific behavior of members of the participating CSAs. Except for the two articles mentioned, the researchers carried out these two steps separately, and no divergences were found in the interpretation of the inclusion and exclusion criteria of the articles; the researchers included the same set of studies selected by the two researchers, totaling 32 articles included in this literature review. Figure 1 summarizes the article selection



process.

Figure 1

PRISMA flow diagram for systematic reviews, which includes the literature review process



Source: Elaborated by the authors

Results

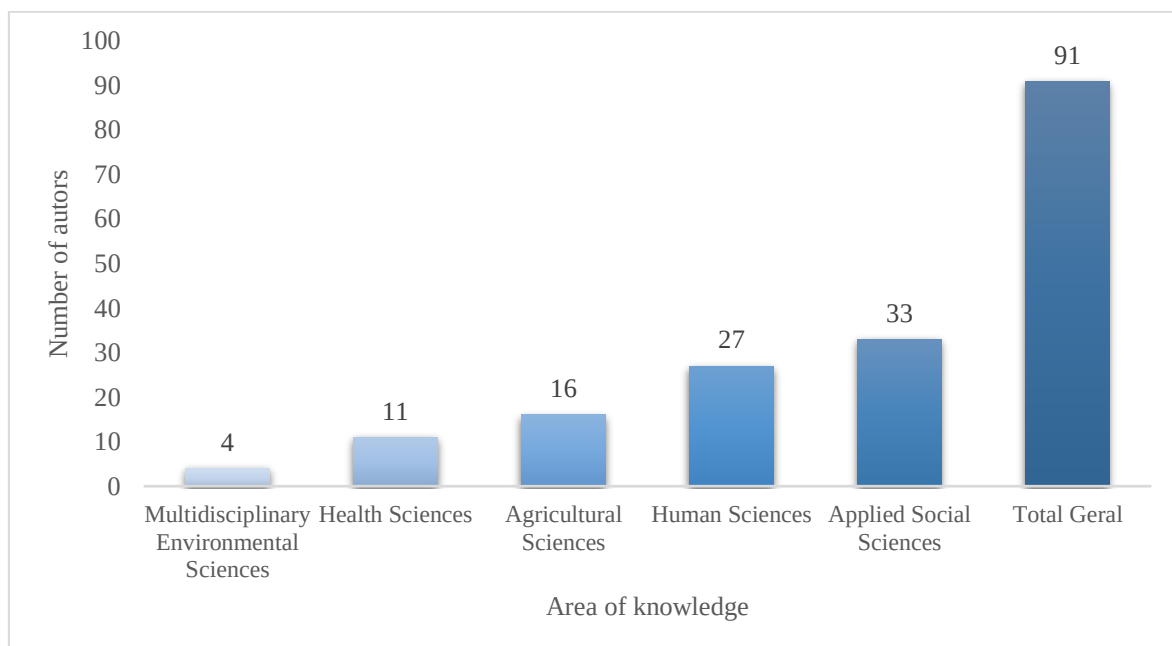
The Table of Knowledge/Assessment Areas⁴ of CAPES has a practical purpose in organizing information relating to research projects of management bodies in science and technology. The table organizes areas of knowledge hierarchically at different levels, from the broadest to the most specific, bringing together nine significant areas of science, constituting forty-nine CAPES assessment areas. This table was used as a reference for classifying and analyzing the distribution of authors by area of knowledge.



The distribution of authors by area of knowledge in Figure 2, identified in articles investigating behavioral issues related to CSAs, focuses on Applied Social Sciences and Human Sciences, which total 65,93%. In contrast, 30,07% of the authors were published in agricultural sciences, health sciences, and multidisciplinary publications in environmental sciences.

Figure 2

Authors by area of knowledge



Source: Elaborated by the authors

No articles were identified with authors with training in exact and earth sciences, biological sciences, or engineering. In applied social sciences, the area of knowledge with the most significant number of authors, specific training focuses on economics and some variations (agricultural, environmental, applied, consumer, political, and rural economics), agriculture, and administration. In human sciences, they focus on geography and psychology; in agricultural sciences, agronomy; in health sciences, nutrition, public health, and epidemiology; and in environmental sciences, with multidisciplinary training with an environmental focus.

There needs to be a more precise boundary between the disciplines in behavioral sciences. According to Gintis (2007), behavioral disciplines aim to understand and model human behavior in different and sometimes incompatible ways. However, the author



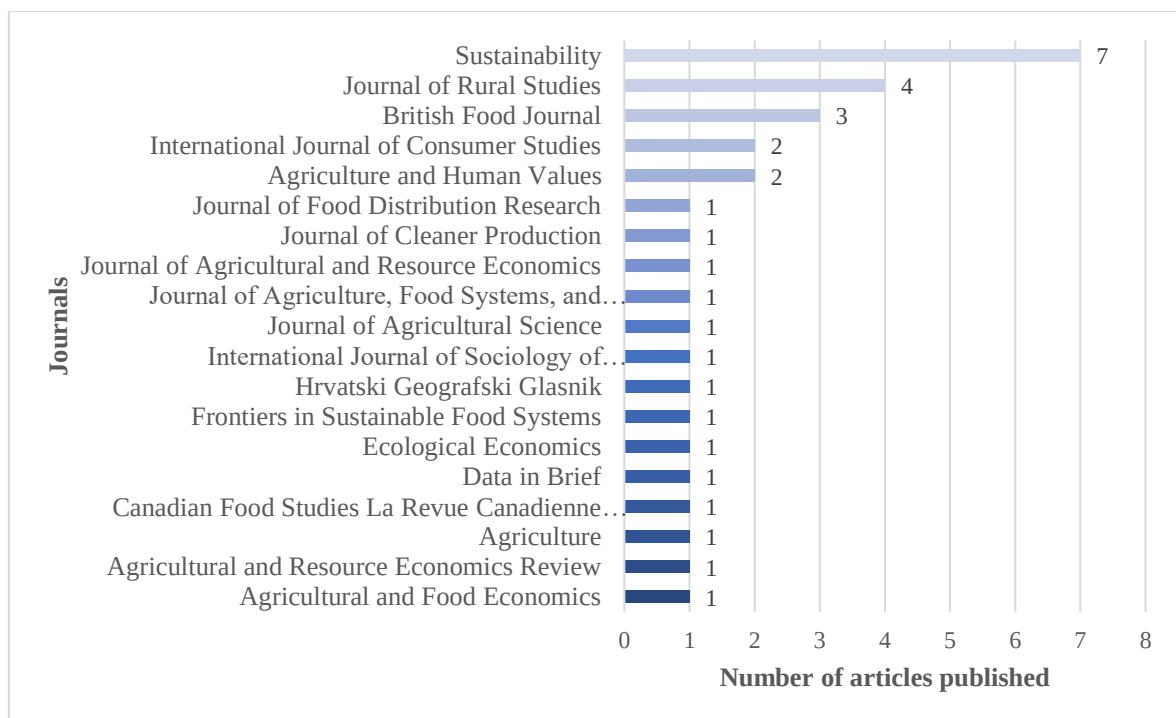


emphasized that it is necessary to recognize the presence of evolutionary theory and genetic and cultural evolution as basic and integrating principles of behavioral sciences. Thus, for the author, behavioral sciences encompass psychology, biology, anthropology, sociology, economics, political science, and other subdisciplines with neuroscience and disciplines related to legal studies and philosophy.

In the period defined for the literature review, publications were concentrated in the international journal Sustainability, with the Qualis Capes A2 classification (Brazilian journal evaluation system run by CAPES, in the triennium 2018//2020), peer-reviewed and open access on topics that cover environmental, cultural, economic and social sustainability, as shown in Figure 3. The other journals focus on publishing studies related to agricultural sciences, sustainability, and food systems, among other similar issues.

Figure 3

Number of articles published between 2019 and 2023 per journal



Source: Elaborated by the authors

Considering the severity of the climate crisis and its relationship with food production, scientific research on the behavior of CSA members (i.e., co-farmers) is relatively limited. There are no global surveys on the amount of CSA in the world; however, a recent census in





2020 by the United States Department of Agriculture⁸ identified 7,244 rural producers operating through a CSA, representing 225 million dollars of the country's 2.9 million dollars in direct sales. The dominance of conventional agricultural production may explain the low interest in research on CSAs. This review focuses on an area that explains cultural changes in food production. In this sense, investments in communication and scientific dissemination about preservationist agricultural practices' social and environmental benefits can provoke changes in food consumers' choices (i.e., behavior). As a final result of the review, 32 articles that met the inclusion criteria were selected, of which only five included the participation of at least one or a group of researchers in the field of psychology (a total of nine psychologists). Table 1 provides information about the articles selected in this review, including the title, authors' year of publication, and journals.

Table 1

Articles Included in the Review

Title	Authors and year of publication	Journal
"At first, I was only a subscriber": re-mediating food citizens' solidarity practices through digital technologies.	Stehrenberger and Schneider, (2023)	Frontiers in Sustainable Food Systems
Exploring member trust in German community-supported agriculture: a multiple regression analysis	Zoll et al., (2023)	Agriculture and Human Values
Who does not attend farmers markets and the community supported agriculture (CSA) programs?	Gumirakiza and Milliner, (2022)	Journal of Agricultural Science
Understanding low-carbon food consumption transformation through social practice theory: The case of community supported agriculture in Norway	Standal and Westskog, (2022)	International Journal of Sociology of Agriculture and Food
Re-energizing Japan's Teikei movement: Understanding intergenerational transitions of diverse economies	Kondo, (2021)	Journal of Agriculture, Food Systems, and Community Development
Know the farmer that feeds you: A cross-country analysis of spatial-relational proximities and the attractiveness of community supported agriculture	Gugerell et al., (2021)	Agriculture
Local food communities: exploring health-related adaptivity and self-management practices	Birtalan, Neulinger et al., (2021)	British Food Journal
Marketing to the foodshed: why do farmers participate in local food systems?	Schoolman et al., (2021)	Journal of Rural Studies
Exploring the economic, social, and environmental dimensions of community-supported agriculture in Italy	Medici et al., (2021)	Journal of Cleaner Production

⁸ <https://www.nass.usda.gov/Publications/Highlights/2022/local-foods.pdf>





Title	Authors and year of publication	Journal
A potential sustainable pathway for community-supported agriculture in Taiwan: the consumer perspective in a farmers' market	Pisarn et al., (2020)	Sustainability
Understanding shareholder satisfaction and retention in CSA incentive programs	Rossi and Woods (2020).	Journal of Food Distribution Research
Consumer inequality aversion and risk preferences in community supported agriculture	Bernard et al., (2020)	Ecological Economics
Box-scheme as alternative food network—the economic integration between consumers and producers	De Souza, (2020).	Agricultural and Food Economics
What makes a CSA a CSA? A framework for comparing community-supported agriculture with cases in Canada and China	Si et al., (2020)	Canadian Food Studies La Revue Canadienne Des études Sur l'alimentation
The role of community: CSA member retention	Witzling et al., (2020)	British Food Journal
Community supported agriculture as a driver of food-related well-being	Birtalan, Bartha et al., (2020)	Sustainability
Exploring collaboration and consumer behavior in food community networks and constraints preventing active participation: The case of Turkey	Kurtsal and Viaggi, (2020)	Sustainability
Investigating consumer participation decision in Community-Supported Agriculture: An application of Cumulative Prospect Theory	Zhao and Yue, (2020)	Journal of Agricultural and Resource Economics
Co-Creating value in sustainable and alternative food networks: The case of Community Supported Agriculture in New Zealand	Savarese et al., (2020)	Sustainability
Short food supply chains in Croatia: perspectives of organic food producers involved with groups of solidary exchange	Slavuj Borčić, (2020)	Hrvatski Geografski Glasnik
Sustainability as a business strategy in community supported agriculture: Social, environmental, and economic benefits for producers and consumers	Matzembacher and Meira (2019)	British Food Journal
Community Supported Agriculture membership: The benefits of spousal involvement	Birtalan et al. (2020)	International Journal of Consumer Studies
Non-participants interest in CSA – Insights from Germany	Diekmann and Theuvsen (2019a)	Journal of Rural Studies
Value structures determining Community Supported Agriculture: insights from Germany	Diekmann and Theuvsen, (2019b)	Agriculture and Human Values
Community Supported Agriculture Farmers' perceptions of management benefits and drawbacks	Samoggia et al., (2019)	Sustainability
Retaining members of Community Supported Agriculture (CSA) in California for economic sustainability: What characteristics affect retention rates?	Galt et al. (2019)	Sustainability
Consumer-producer interactions in community-supported agriculture and their relevance for economic stability of the farm – An empirical study using an Analytic Hierarchy Process	Opitz et al. (2019)	Journal of Rural Studies
A choice based experiment of Community Supported Agriculture (CSA): A valuation of attributes	Yu et al. (2019)	Agricultural and Resource Economics Review





Title	Authors and year of publication	Journal
The (un)making of “CSA people”: Member retention and the customization paradox in Community Supported Agriculture (CSA) in California	Galt, Bradley et al. (2019)	Journal of Rural Studies
Exploring member data for Community Supported Agriculture (CSA) in California: comparisons of former and current CSA members	Galt et al., (2018)	Data in Brief
Gaining and maintaining a competitive edge: Evidence from CSA members and farmers on local food marketing strategies	Morgan et al. (2018)	Sustainability
Individual choice or collective action? Exploring consumer motives for participating in alternative food networks	Zoll et al. (2018)	International Journal of Consumer Studies

The interest in identifying behavioral patterns of members of a CSA permeates Applied Social Sciences, Human Sciences, Agricultural Sciences (and Environmental Sciences), and Health Sciences in the period defined in this literature review. The behaviors of interest investigated are related to (a) practices of solidarity, conscious and collaborative consumption related to food and food production/cultivation (Standal & Westskog, 2022; Stehrenberger & Schneider, 2023); (b) values and principles for adherence (Diekmann & Theuvsen, 2019b; Kondo, 2021); (c) participation in food systems that are based on cooperation and collaboration (Kurtsal & Viaggi, 2020; Slavuj Borčić, 2020); (d) socioeconomic and environmental support actions, sustainability practices, citizenship/civicism, aversion to inequality, and risk preferences (Bernard et al., 2020; De Souza, 2020; Matzembacher & Meira, 2019; Medici et al., 2021; Opitz et al., 2019; Savarese et al., 2020; Schoolman et al., 2021; Yu et al., 2019; Zhao & Yue, 2020); (e) establishing relationships of trust and social proximity between farmers and consumers (Gugerell et al., 2021; Zoll et al., 2023); (f) ability to adapt and self-manage food consumption related to health and well-being (Birtalan, Bartha, et al., 2020; Birtalan et al., 2021); (g) consumption preferences in the context of a CSA (Gumirakiza & Milliner, 2022); (h) behaviors in different countries or different parts of one country, and cultural evolution (Galt, Van Soelen Kim, et al., 2019; Samoggia et al., 2019); (i) interest in participating or aspects that promote or hinder member retention (Diekmann & Theuvsen, 2019a; Galt, Bradley, et al., 2019; Galt et al., 2018; Galt, Van Soelen Kim, et al., 2019; Gugerell et al., 2021; Morgan et al., 2018; Pisarn et al., 2020; Rossi & Woods, 2020; Si et al., 2020; Witzling et al., 2020; Zoll et al., 2018) and (j) influence of the spouse on joining a CSA (Birtalan, Neulinger, et al., 2020).





4.1 Behavior Patterns in CSAs: Psychology Research

Psychology research has been published in multidisciplinary journals investigating different topics, such as the influence of the spouse on participation in a CSA (Birtalan, Neulinger, et al., 2020); value creation and sustainability practices (Savarese et al., 2020); psychological, social, and spiritual aspects of well-being related to food (Birtalan, Bartha, et al., 2020); and motivations for participation and the potential to be healthy (Birtalan et al., 2021).

Birtalan, Neulinger, et al. (2020) conducted exploratory research to investigate the impact of spouses on adherence to a CSA. The study identified three patterns of marital influence on the decision to consume and participate in a CSA: coherent, integrative, and neutral/antagonistic. The authors suggest that to achieve greater adherence and participation in CSAs, providing more information about the benefits of alternative food networks, which can help individuals obtain greater marital support, is important.

Birtalan, Bartha, et al. (2020) studied the concept of food-related well-being, which includes making choices to manage health, sensory experiences, psychological and social well-being, and spiritual well-being. These findings align with those of Birtalan et al. (2021), who examined the ability to adapt to a healthy lifestyle and manage food consumption within two of Hungary's oldest community-supported agriculture (CSA) programs. This qualitative study involving 35 participants revealed that they shared similar views on the significance of knowing the origin of their food, improving and managing their eating habits, understanding the impact of what they consume and how they consume it, and experiencing a sense of well-being, strengthened self-image, and a positive social outlook, all fostered by their healthy practices.

In ethnographic research aiming to investigate how CSAs create value for the sustainability practices of their members and farmers, Savarese et al. (2020), who are from the field of psychology and analyze consumer behavior, investigated how community-supported farms (CSAs) create value for sustainability practices, both from the perspective of the farmer and the consumer. The authors conclude that CSAs are characterized by a complex system, dependent on the active participation of their members (consumers), who share strong social, economic, and environmental values.

Although few studies conducted by researchers with a background in psychology were identified, varied interests were noted regarding the behavior investigated and the use of





research methods. Given the movement's presence in diverse regions (e.g., North and South America, Europe, and Asia) and its development over several decades, cross-cultural exploratory studies could produce meaningful comparisons for future research.

4.2 Behavior Patterns in CSAs: Research in Different Areas

The TEIKEI movement originated in Japan between the 1960s and 1970s, and as a community movement, it established itself in the world under the term Community Supported Agriculture (CSA) (Henderson & Van En, 2007; Kondo, 2021). Alternative Food Networks (AFNs) are generally used for similar purposes. However, CSAs have more striking peculiarities, described as principles and values, which can be understood as behavior governed by rules (Hayes et al., 1986; Matos, 2001). CSAs stand out as a movement that transmits cultural values and principles for generations and has faced challenges in embracing the changes and adaptations of the modern economy for its survival. Younger generations of members and farmers seek to confront these changes to meet the reality of a different world than when the movement emerged (Kondo, 2021).

Schoolman et al. (2021) warned that there are few survey-based studies with representative samples on the relationship between the commercialization of local foods and the responsibility of farmers for maintaining human and ecological communities around food. A study with producers (n=698) from Michigan and Ohio revealed that farmers who prioritized civic involvement and perceived benefits in community institutions tended to engage more in food models such as CSAs and tended to adopt food philosophies organic, biodynamic or agroecological management as a form of commitment to sustainable agriculture.

According to Medici et al. (2021), CSAs are still common in Italy. The authors conducted a study with qualitative methodology and participant observation to understand the social, economic, and environmental benefits for the members of a CSA, in which they concluded that despite different levels of participation, the CSA meets its sustainability, economic, and social objectives. In this sense, Samoggia et al. (2019) observed similar perceptions among CSA members in Hungary and the United States, especially regarding food quality, health, and environmental and community benefits. The authors highlight that the differences in perceptions between CSAs in these two countries focus on economic, financial, and management aspects.





The article "At First, I Was Only a Subscriber": Remediating Food Citizens' Solidarity Practices through Digital Technologies" sought to explore solidarity practices and how the use of digital platforms can contribute to communication in these collective spaces in which producers and consumers support each other and share the risks and benefits of food production (Stehrenberger & Schneider, 2023). The authors carried out qualitative research using ethnography and a theoretical-methodological approach to social sciences and anthropology, concluding that using digital technologies helps increase the number of participants in a CSA, as they play an essential role in sharing information and organizing collaborative community work. In this sense, in qualitative research, Slavuj Borčić (2020) investigated cooperation between organic food producers and solidarity exchange groups in Croatia. The solidarity exchange groups analyzed use a purchasing platform that guarantees direct acquisition from a small producer without intermediaries. Participants in this platform share values and principles of environmental preservation, encouraging solidarity between producers and consumers. In this study, the author considered several types of alternative food networks, such as CSA and similar networks, such as Gruppi di Acquisto Solidale (GAS) in Italy and Associations pour le Maintien d'une Agriculture Paysanne (AMAP) in France, and concluded that the choice to participate in a socially fair and environmentally sustainable system that exchanges conventional foods for high-quality foods produced transparently drives the growth of this type of consumption.

Zoll et al. (2023) are researchers in the agricultural area, urban regional development, environmental sciences, and policies. The authors reported that issues related to the lack of transparency about how food is produced in conventional agriculture reduce consumer confidence in the dominant food system. They investigated the relationships of trust and reputation between members of a CSA (n=790) using scales developed for this purpose in the marketing area. They concluded that trust in a CSA and its farmers is influenced by "reputation," "information provision," "direct social interaction," and "duration of membership in the CSA." In this study, having organic production certification did not predict this type of relationship.

As some studies relate the importance of CSAs to preserving the environment, it is worth highlighting that other articles not included in this review seek to establish relationships between sustainable agricultural practices adopted by CSAs and the reduction of greenhouse gas emissions (Bellamy et al., 2023). Standal & Westskog (2022), in their case study on Norwegian CSAs, connect pro-environmental behaviors, values, and practices to social





transformation. This transformation includes shifts in consumption patterns and promoting food choices that support low-carbon practices. Despite the importance of small daily practices, it is necessary to find strategies for sustainable food production to bring about large-scale changes. The researchers are linked to the Center for International Climate Research (CICERO), an important research center in Oslo, Norway (Standal & Westskog, 2022).

Gumirakiza and Milliner (2022), who have a background in Economics and Agricultural Sciences, investigated consumers (n=172) of agricultural fairs and the probability of participating in CSAs. Among other results, the authors concluded that consumers with a higher level of education are more likely to participate in a CSA and show more interest in participating in CSAs that use applications to purchase products. On the other hand, with the same intention, Pisarn et al. (2020), researchers linked to the areas of agriculture, applied economics, and bioindustries, investigated the reasons why people (n=320) engage or not engage in CSAs and what motivates consumers to share production risks in advance, relating variables such as contract duration and other variables, in a small location in Taiwan. The authors conclude that marketing and communication strategies are fundamental for people to understand what participating in a CSA is about and that making the initial membership period more flexible in the search for new members is positive and suggest that future studies can better investigate the characteristics of these consumers and the factors why they decide to participate in a CSA. Nevertheless, (Yu et al., 2019) investigated the willingness of members (n=1,348) of CSAs in Connecticut (USA) to pay more for attributes provided for in a CSA, including the mitigation of health risks, and found that the results were heterogeneous. Not all survey participants value organic production, which is the preference of younger people.

An important topic investigated in this context is related to member retention. Rossi and Woods (2020), linked to geography and agricultural sciences, sought to understand the relationship between the satisfaction of members of a CSA and its relationship with retention rates, comparing new and old members and evaluating which variables affect their decisions to join or recommend the CSA they participate. Similarly, other authors explore the dilemma between maintaining the traditional values of a CSA and adopting more flexible membership and payment mechanisms while still seeking to strengthen traditional, collective, and civic ecological relationships (Si et al., 2020).

Bernard et al. (2020), who are part of the Institut National de Recherche pour L'agriculture (INRAE) and the Faculty of Economic Sciences of Rennes (Université de Rennes), investigated the behavior of risk preferences and aversion to inequalities among





French consumers (n= 162). The results showed the concern of consumers (members) of a CSA about farmer remuneration inequalities and that the perception of inequality and risk preferences can reinforce consumers' support for farmers.

Other studies have investigated how, in the relationship between farmers and consumers, members of CSAs, the establishment of relationships of reciprocity and trust occurs and how this type of alternative food network contributes to rural sustainability by extrapolating rational analyses on price and product quality (De Souza, 2020). Topics related to relationships of trust, collaboration, and value sharing have attracted the attention of researchers from various areas of science. Gugerell et al. (2021), with a background in economic and agricultural sciences, carried out a cross-cultural study with members (n=209) of CSAs in Austria, Norway, and Japan to examine the multiple dimensions of proximity in the context of communities, seeking to understand how they, attract their members through relationships of trust, collaboration, and sharing of values and knowledge. The authors emphasize that studies on the factors that can strengthen CSAs still need improvement. However, future studies should investigate what supports sociocognitive and institutional relationships to strengthen CSAs.

Expected Utility Theory (EUT) by Tversky and Kahneman, Zhao & Yue (2020), who are from the fields of agricultural economics, social sciences applied, and horticultural marketing, analyzed the factors that influence the decision of consumers (n=470) to choose to participate in a CSA. They found that loss aversion significantly affects the decision to participate in a CSA; in other words, consumers tend to look for low risk in participating in a CSA. From another perspective, Kurtsal and Viaggi (2020), researchers in the field of agricultural and food sciences, used Ajzen's Theory of Planned Behavior (TPB) to investigate how consumers' behavioral intentions are influenced by Food Community Networks (FCNs) in Turkey. The authors concluded that collaboration is a factor that positively predicts the intention to participate in communities.

Matzembacher and Meira (2019), researchers in Brazilian administration, conducted a theoretical study to examine how environmental sustainability is integrated into a CSA's business model. They observed that this type of economic activity challenges the conventional focus on maximizing profit and prioritizing short-term economic gains, instead intertwining economic concerns with social aspects. According to the authors, these characteristics foster a community ethos around food.

Diekmann and Theuvsen (2019b), researchers in the field of agricultural economics





and rural development, used Schwartz's Theory of Value Profiles from the field of social psychology to understand the value structure of members of a CSA in Germany. The authors administered an online questionnaire (n=205) with standardized items to community members. Their results showed that adherence to a CSA follows a characteristic pattern of values, which indicates an appreciation for self-transcendence and openness to change (Diekmann & Theuvsen, 2019a), and investigated the factors that promote, hinder or influence the interests of people who are not yet participants in a CSA among (n=1,139) German consumers. The authors applied the Unified Acceptance and Use of Technology Theory (UTAUT 2), which analyzes seven constructs (performance expectancy, effort, social influence, facilitating conditions, hedonic motivations, price, and habit), which supported the construction of items, analyzed based on a Likert scale, in 5-point degrees of agreement. The results showed that consumers' hedonic motivation, personal habits, and agricultural interests, influenced by their social group, positively influence their participation in CSAs.

Galt et al. (2018) and Galt, Bradley et al. (2019), researchers in human ecology, agriculture, and geography, believe that CSAs respond to the conventional agri-food system, which has harmful social and economic consequences for society. A study on member retention examined variables related to how CSAs are managed, which can contribute to economic sustainability and increase member retention rates. According to the results obtained, the authors suggest that diverse strategies can be used to retain members. They argued that CSAs could become stronger if they offered a greater mix of products, aligned their agricultural practices with biological land management standards, worked with other CSAs, reduced competition, and expanded communication and marketing actions. This study highlights the importance of strengthening the support network between CSAs, as in the case of the United States, FairShare, and the Community Alliance for Family Farmers, which can stimulate technical and financing in addition to stimulating collaborative practices between communities.

A similar study by Galt, Van Soelen Kim, et al. (2019) investigated the relationship between CSA member retention and economic sustainability, analyzing which characteristics influence member retention rates. The authors compared old and new members, asking about their reasons for joining a CSA. The authors carried out an analysis of the relationship between importance and satisfaction (Importance-Satisfaction Analysis - ISA) of current and former members of CSAs in California in the United States using questionnaire items that assessed demographic data, the value of baskets and involvement in activities of the communities,





among other items. A similar set of items was developed for members who stopped participating with additional questions about reasons for discontinuing participation. The researchers' findings highlighted a "CSA customization paradox" tailoring CSAs to members' consumption needs did not correlate with increased member retention or CSA survival rates. They suggest alternative strategies such as focusing on member recruitment or cultivating deeper engagement with existing members. In this sense, Witzling et al. (2020), in research on the role of the community in retaining members of CSAs in the United States, examined motivations related to food and commitment to stay using an online questionnaire. The authors concluded that despite the importance of food-related motivations for participating in CSA, it was clear that the role of the community could be fundamental for member engagement.

Opitz et al. (2019), researchers in agriculture and geography, investigated which consumer-producer interactions are most important for the economic stability of CSAs in Germany. Direct collaboration with consumers allows farmers to obtain more independence from traditional markets but, on the other hand, greater dependence on their members.

Understanding why local consumers and farmers want to be part of a CSA model has been a frequent topic of study (Morgan et al., 2018; Zoll et al., 2018). Cultural aspects and slight differences in models make generalizations difficult but allow us to identify similar results about practices, values, and principles. The motivations of members and farmers for belonging to or adopting the CSA model are being explored by researchers from different areas of knowledge but still need to be explored in psychology. The behavioral patterns observed and functionally analyzed allow the elaboration and proposition of programs and public policies that encourage local socioeconomic and environmental development through alternative food networks such as the CSAS.

Conclusion

This systematic literature review aimed to identify studies that have investigated the behavior patterns of CSA members related to pro-environmental and prosocial behaviors or behaviors motivated by health-related concerns, using (i) psychology as a theoretical-methodological approach or (ii) to identify other areas of science interested in behavioral issues related to its members. In this review, we sought to observe perspectives of cultural evolution, which demonstrate the transmission of behaviors based on the principles and values of communities through generations and cross-culturally.





Interest in the behavior of co-farmers, their perceptions regarding the food they consume, and motives (i.e., antecedent contingencies that evoke specific behaviors reinforced by their interactions, that is, by interlocked behavioral contingencies; Glenn et al., 2016; Malott & Glenn, 2019) by which they participate and engage in a type of community that requires broad cooperation from its members, is present in several areas of science as a way of understanding and developing strategies to stimulate pro-environmental and prosocial behaviors (Galt et al., 2018; Galt, Bradley, et al., 2019; Galt, Kim, et al., 2019; Lange & Dewitte, 2019; Opitz et al., 2019; Stehrenberger & Schneider, 2023; Zoll et al., 2018).

Studies on the behavior patterns of CSA members are still scarce in the field of psychology. However, other scientific disciplines have shown great interest in this phenomenon, as it contributes to developing prosocial, pro-environmental, and healthcare behaviors. These behaviors are crucial for the preservation of food and plants in the context of our current lives. Such behaviors are governed by rules incorporated at the individual and collective levels, which are based on collective principles and values. The interlocking of behavioral contingencies strengthens individual and community ties, resulting in a collective benefit that contributes to preserving the environment for the broader society.

Verbal relationship analyses are necessary to investigate values, actions, and products that are important, for example, for members of CSAs. Understanding values also involves the analysis of derived relations (e.g., Newsome & Alavosius, 2011). The advancement of research in this area shows the impact of "derived verbal relations" and the potential impact of these "talks" about choices (e.g., Hayes et al., 2001).

This review examines research from 19 journals involving variations in data collection instruments but converging on critical points to be investigated in this line of research, which is relatively new on the national and international scene. Investigating control variables in CSA members' relationships is fundamental for obtaining a broad understanding via a broad functional analysis of this system, whether at the regional or national level and through international movement. Behavior analysis instruments can contribute to identifying these potentially prominent variables and their description via analysis of a behavioral system, with contingencies and members, with support from the literature in the area. The selection of cultural practices helps us understand the factors that maintain new practices. Informational and motivational messages can lead to changes, but reinforcing consequences for those changes will select the expected future patterns (Da Rocha & Hunziker, 2020; Glenn et al., 2016; Tagliabue, 2023; Vasconcelos, 2023) macrocontingencies, and metacontingencies that





can be interpreted from data obtained in surveys among CSA members, with support from the literature in the area. The selection of cultural practices helps us understand the factors that maintain new practices. Informational and motivational messages can lead to changes, but reinforcing consequences for those changes will select the expected future patterns (Da Rocha & Hunziker, 2020; Glenn et al., 2016; Tagliabue, 2023; Vasconcelos, 2023).

Limitations of the Literature Review

Studies that observe phenomena related to communities, even when they involve analyzing physical-chemical data on soil management or crops produced, economic profitability, or investigating the efficiency and effectiveness of a CSA model, are about human behavior. They involve human choices and decisions in adopting land management or commercialization practices. This study sought to analyze those that most characterize the choices and decisions of CSA members related to the principles and values advocated by this type of movement, which have consolidated and long-established rules. This review may be expanded depending on the researcher's objectives and the critical variables defined by the researcher. The inclusion and exclusion criteria for articles outlined in this study may or may not have been sufficient, as some authors do not highlight words such as "behavior" but use other expressions to inform the reader of what they intend to investigate.

As Skinner (1987) provoked us to question why we are not acting to save the world, we invite reflection on what we can do, as behavioral scientists, to encourage prosocial, pro-environmental behaviors in the most diverse social practices. Scientific investigation into the behavioral patterns observed in CSAs by psychology as a science is fundamental, as it would help to understand ways of stimulating behaviors vital for the planet's survival, especially currently, in the context of global warming.

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Received: 3.3.2025

Accepted: 3.25.2025

