



Promoting Sustainable Development and Social Inclusion in Community Supported Agriculture – A Cultural-Behavior Approach

Promoção do Desenvolvimento Sustentável e Inclusão Social em Comunidades Agricultura Apoiada – uma Abordagem Culturo-Comportamental

Promoción del Desarrollo Sostenible e Inclusión Social en la Agricultura Apoyada por la Comunidad: Análisis Cultural del Comportamiento

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Abstract

Community Supported Agriculture (CSAs) has emerged as a counterbalance to intensive agriculture, contributing significantly to environmental degradation and climate change. By fostering direct interaction between producers and consumers (co-farmers), CSAs promote local economic development, adopting sustainable food production practices and reducing greenhouse gas emissions. Consequently, CSAs represent an innovative alternative to conventional production and marketing models. From a culturo-behavioral perspective, this study investigated the reasons underlying members' decisions to leave or remain in CSAs and strategies to strengthen these communities. Employing a descriptive and exploratory approach, the research utilized an online questionnaire completed by 104 active members of Brazilian CSAs. The theoretical and methodological framework of behavior analysis provided the tools to analyze the behavioral variables influencing members' decisions to leave or remain and to evaluate their suggestions for strengthening these communities. Furthermore, CSAs facilitate the transmission of cultural practices and behavioral patterns that sustain pro-environmental and pro-social behaviors.

Keywords: Community Supported Agriculture. Pro-environmental Behaviors. Pro-social

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Behaviors. Metacontingencies. Culturo-Behavior Analysis. Behavioral Science.

Resumo

As Comunidades que Sustentam a Agricultura (CSAs) surgiram em contraposição à agricultura intensiva, que contribui para a degradação ambiental e mudanças climáticas. Ao promover a interação entre produtores e consumidores (coagricultores), as CSAs fomentam a economia local, a adoção de práticas sustentáveis na produção de alimentos e na redução da emissão de gases de efeito estufa. Dessa forma, as CSAs representam uma alternativa inovadora aos modelos convencionais de produção e comercialização. Este estudo investigou, a partir de uma perspectiva culturo-comportamental, as razões para deixar, permanecer e sugestões de estratégias para fortalecer as comunidades. A pesquisa, de natureza descritiva e exploratória, utilizou um questionário online, respondido por 104 participantes, membros ativos de CSAs brasileiras. O arcabouço teórico-metodológico da análise do comportamento permitiu analisar variáveis comportamentais que influenciam no abandono e na permanência de membros nas CSAs e suas sugestões de estratégias para fortalecimento das comunidades. As comunidades favorecem a transmissão de práticas culturais e padrões comportamentais que mantêm comportamentos pró-ambientais e pró-sociais.

Palavras-chave: Comunidades que Sustentam a Agricultura. Comportamentos Pró-ambientais. Pró-sociais. Metacontingências. Análise-Culturo Comportamental. Ciência do Comportamento.

Resumen

La Agricultura Apoyada por la Comunidad (CSA) surgió como respuesta a la agricultura intensiva, práctica que contribuye significativamente a la degradación ambiental y al cambio climático. Al fomentar la interacción directa entre productores y consumidores (coagricultores), la CSA promueve el desarrollo económico local, la adopción de prácticas de producción de alimentos sostenibles y la reducción de las emisiones de gases de efecto invernadero. En consecuencia, la CSA representa una alternativa innovadora a los modelos convencionales de producción y comercialización. El presente estudio investigó, desde una perspectiva cultural-conductual, las razones que subyacen a las decisiones de los miembros de abandonar o permanecer en las CSA, así como las estrategias para fortalecer estas comunidades. Empleando un enfoque descriptivo y exploratorio, la investigación utilizó un cuestionario en línea completado por 104 miembros activos de las CSA brasileñas. El marco





teórico y metodológico del análisis del comportamiento proporcionó las herramientas para analizar las variables conductuales que influyen en las decisiones de los miembros de abandonar o permanecer, y para evaluar sus sugerencias para fortalecer estas comunidades. Además, las CSA facilitan la transmisión de prácticas culturales y patrones de comportamiento que sustentan comportamientos proambientales y prosociales.

Palabras clave: Agricultura Apoyada por la Comunidad. Comportamientos Proambientales. Comportamientos Prosociales. Metacontingencias. Análisis Cultural-conductual. Ciencia del Comportamiento.

Introduction

Intensive agriculture, characterized by the excessive use of pesticides, has contributed significantly to environmental degradation and the acceleration of climate change. Conversely, movements advocating for sustainable practices in large-scale production, such as Integrated Crop-Livestock-Forestry (ICLF) systems, no-till farming, biological nitrogen fixation, and the restoration of degraded pastures, are gaining traction (Bolfe *et al.*, 2018; Embrapa, 2024). However, the richness of Brazilian agriculture lies significantly in the diversity of food production from family farming, which continues to face challenges in accessing technical assistance and production technologies. Gazolla & Schneider, 2022; Schneider, 2022).

Climate change, exacerbated by human consumption and environmentally damaging practices, poses an increasing threat to the availability of potable water and human survival. Vulnerable populations possessing diminished adaptive capacity will be disproportionately affected, leading to widening social inequalities (Lee *et al.*, 2023). The increasing frequency of extreme weather events, such as droughts, floods, and storms, over recent decades has impacted agricultural production, driven up food prices, and jeopardized the food security of millions (Bustamante *et al.*, 2023; Mattaini, 2023; Swinburn *et al.*, 2019). In this context, smaller-scale productive initiatives, such as Community Supported Agriculture (CSAs), can significantly impact environmental preservation and biodiversity (Henderson & Van En, 2007). A CSA fosters a close relationship between small-scale rural producers, typically family farmers, and end consumers, establishing a short supply chain. This dynamic promotes local economic development, adopting sustainable practices, transforming individual and





collective behaviors, and reducing greenhouse gas emissions, thereby mitigating climate and environmental effects. The reach and benefits of these initiatives can be amplified through research programs, behavioral interventions, and the development of public policies that incentivize consistent behavioral change toward sustainable food production and responsible consumption (Telles & Righetto, 2019).

CSAs, as Alternative Food Networks (AFNs), stand in contrast to the conventional food production system (Darolt *et al.*, 2016). These communities are grounded in collective principles and values prioritizing healthy food systems and environmental preservation through agroecological production (Gazolla & Schneider, 2022). The traditional agricultural model, conversely, is frequently associated with the use of chemical inputs and pesticides, deforestation, and intensive soil use, thereby contributing to chemical contamination of food production, the environment, and the health of producers and consumers (Daufenback *et al.*, 2022; Sarpa & Friedrich, 2022).

CSAs are important in mitigating carbon emissions, promoting biodiversity, and reconnecting individuals with food production processes. The restoration of degraded lands and sustainable production are core principles CSAs advocate globally. This model, grounded in agroecological agriculture, community economics, and environmental stewardship, presents an innovative alternative to conventional food production and marketing systems. Originating in Japan during the 1970s, the concept emerged when Teruo Ichiraku (1906-1994), a philosopher and leader of agricultural cooperatives, cautioned against the risks of using pesticides and chemical inputs in conventional agriculture. In 1971, the Japan Organic Agriculture Association (JOAA) was established to unite consumers and producers through the Teikei system, meaning "alliance" or "partnership." Teikei emphasizes food security and the production of organic and agroecological products, bringing together farmers and co-farmers around shared values and principles that guide agricultural practices and the relationships between producers and consumers (Henderson & Van En, 2007; Kondo, 2021).

CSAs are mobilized by civil society and social movements that champion social responsibility, conscious consumption, sustainability, and socio-biodiversity (Grisa *et al.*, 2021). CSAs are structured through an informal contractual agreement between farmers and co-farmers (i.e., consumers) for the production and marketing of food, wherein they share risks and responsibilities associated with food production and distribution. Co-farmers are frequently invited to participate in collective activities, collaborating in food production through communal work. They may also be involved in governance, training initiatives, event





organization, and community outreach. CSAs are considered a form of social technology grounded in the principles of solidarity, associative, and collaborative economics (Rede CSA Brasília, 2024). The concept of social technology encompasses techniques and methodologies that promote social inclusion and improve living conditions (Otero & Jardim, 2004). Social technology can foster social agreements that strengthen associativism, self-governance, and cooperation (Dagnino, 2011, 2014).

This study, forming part of a doctoral thesis exploring the transmission of cultural practices that preserve the environment and strengthen family farming within Community Supported Agriculture (CSAs), aimed to investigate the reasons articulated by active members of Brazilian CSAs for leaving or remaining in a CSA, and to identify strategies for strengthening these communities, employing a culturo-behavioral approach. Specifically, it examines interlocking behavioral contingencies (IBCs) that reinforce pro-environmental behaviors (e.g., pesticide-free food production and consumption) and pro-social behaviors (e.g., cooperation, collaboration). Data were collected via an online questionnaire encompassing demographic data, open-ended responses, and a Likert scale item.

The responses from 104 participants (N=104) were subjected to conventional content analysis, encompassing the preliminary analysis of content, categorization, and treatment of textual data, inferences, and interpretation. This process identified patterns and relationships among variables, which were then analyzed from a culturo-behavioral perspective (Bardin, 2000; Câmara, 2013; Glenn *et al.*, 2016). The results indicate that the reasons provided reflect shared values that reinforce pro-environmental behaviors (e.g., pesticide-free food production and consumption) and pro-social behaviors (e.g., cooperation), contributing to sustainable development and social inclusion (Alavosius *et al.*, 2022; Biglan, 2016; Biglan & Glenn, 2013). This study highlights the importance of IBCs in CSA engagement and the potential of the culturo-behavioral approach to promoting sustainable behaviors, informing intervention strategies to strengthen CSAs.

Theoretical Framework

The culturo-behavioral approach provides a pragmatic theoretical and methodological framework for understanding engagement in CSAs, enabling the analysis of the complex interplay between individual behaviors, cultural practices, and the socio-economic and environmental context within which these communities operate. A culturo-behavioral analysis





encompasses the behavioral processes present within a given culture or environment and informs applied behavior analysis by exploring and elucidating verbal relations and the selection of cultural practices (Glenn *et al.*, 2016; Glenn & Malott, 2024; Vasconcelos, 2023).

To facilitate the understanding of behavioral and cultural phenomena, Glenn *et al.* (2016) established a consistent terminology describing key concepts within culturo-behavioral science. These authors define interlocking behavioral contingencies (IBCs) as a type of contingency where one individual's behavior serves as part of the environment for another individual's behavior. IBCs are comprised of interlocking reinforcement contingencies, wherein the social group directly reinforces the individual behavior of participants. Within IBCs, each person's activity, or its effects, functions as an environmental component within the operant contingencies, thereby maintaining the behavior of other individuals (Almeida *et al.*, 2022; Glenn *et al.*, 2016; Glenn & Malott, 2024; Vasconcelos, 2013)

A metacontingency is a contingent relationship between interlocking behavioral contingencies and selecting environmental events (Glenn *et al.*, 2016). A macrocontingency is a socially learned behavior observed in members of a cultural system (Glenn *et al.*, 2016). Glenn *et al.* (2016) refer to macrobehavior as socially learned operant behavior that is observed in the repertoires of multiple members of a cultural system, which is the result of the combination of social learning and the consistency of operant contingencies across social groups, which allows distinguishing between different cultures and subcultures. For the authors, macrobehavior is limited to observable operant behavior.

A macrocontingency addresses the relationship between operant behavior (individual or within IBCs) and a cumulative effect of social significance. This cumulative effect is a product of social practices and is not independently manipulable. Modifying behavior within a macrocontingency requires establishing a connection between individual behavior and its corresponding cumulative effect (Glenn *et al.*, 2016).

The transmission of operant behavior across individual repertoires, extending beyond the lifespan of a specific organism, characterizes a culturo-behavioral lineage. This process occurs at the intersection of operant and cultural selection. Transmitted behavior achieves cultural significance when reinforced and established as operant within new repertoires. Finally, cultural cusp refers to the confluence of unique and non-recurring behavioral contingencies that generate a product resulting in significant sociocultural changes in the history of a social group (Glenn *et al.*, 2016; Glenn & Malott, 2024; Vasconcelos, 2013).

The integration of a behavioral perspective with multidisciplinary approaches





facilitates the analysis of cultural practices within groups sharing common goals, thereby aiding in the planning of large-scale interventions (Alavosius & Houmanfar, 2020; Almeida *et al.*, 2022; Borba, 2019; Carvalho *et al.*, 2017; Cran *et al.*, 2023; Fava & Vasconcelos, 2017; Kill, 2016; Malott & Glenn, 2019; Sánchez *et al.*, 2019; Soares *et al.*, 2018; Vasconcelos, 2023). The analysis of cultural practices enables the development of complementary measures for fostering healthier food systems and generating income for small-scale producers.

Applied behavior science should inspire basic behavioral research to investigate socially relevant issues (Fawcett, 1991, 2021; Fawcett *et al.*, 1980; Hantula, 2019). Dixon *et al.* (2018) contend that behavioral science must translate theoretical advancements into applied technologies to address societal problems. Recent research has fostered a closer relationship between behavior analysis and applied research (Fava & Vasconcelos, 2017; Freitas Lemos *et al.*, 2019; Oliveira, 2018).

Foxall *et al.* (2006) posit that, for effective environmental preservation, it is essential to identify the variables influencing the adoption of pro-environmental behaviors. Sandoval-Escobar and Medina (2015) emphasize the importance of identifying the factors maintaining non-ecological behaviors and the critical environmental conditions necessary for successful environmental preservation. The cumulative effect of unsustainable agricultural practices can harm other agricultural producers and the broader ecosystem. A prime example is the spraying of crops with insecticides, which eliminates targeted pests and beneficial pollinators. Furthermore, consuming foods detrimental to health (e.g., those contaminated with pesticides or highly processed) significantly burdens the healthcare system. CSAs can foster engagement within groups exhibiting convergent production and consumption patterns focused on healthy diets and environmental stewardship (Burigo & Porto, 2021; Swinburn *et al.*, 2019).

Method

This research, part of a doctoral study examining the transmission of cultural practices that preserve the environment and bolster family farming within Community Supported Agriculture (CSAs), employs a descriptive, exploratory, and mixed-methods approach, incorporating qualitative and quantitative data collection. Data were gathered within Brazil through an online questionnaire to analyze the consumption behaviors of three distinct groups exhibiting varied dietary practices (De Oliveira, 2015; Gil, 2017; Günther *et al.*, 2004; Vergara, 2015).





2.1 Participants

The questionnaire was designed to target three distinct profiles of natural food consumers: (a) consumers of conventional, non-industrialized natural products; (b) consumers who preferentially select organic and/or agroecological products; and (c) co-farmers who are active members of a CSA. It comprised both five-point Likert scale questions and open-ended questions. This article focuses on a subset of the questionnaire, explicitly analyzing responses to the open-ended questions provided by active CSA members. These responses concerned (a) the reasons why active CSA members might consider leaving a CSA, (b) the reasons motivating their continued participation in a CSA, and (c) suggested strategies for strengthening member engagement within CSAs. 104 (N=104) active members of Brazilian CSAs completed this section of the questionnaire.

2.2 Instruments

The questionnaire on the Consumption Behavior of Members of a CSA (CBCSA) was developed based on a systematic review of the literature (Bernard *et al.*, 2020; Birtalan *et al.*, 2020; Galt *et al.*, 2018; Galt, Bradley *et al.*, 2019; Galt, Kim, *et al.*, 2019; Kurtsal & Viaggi, 2020; Rossi & Woods, 2020; Samoggia *et al.*, 2019; Si *et al.*, 2020; Souza, 2020; Witzling *et al.*, 2020).

2.3 Procedure

This research received approval from the Research Ethics Committee of the Institute of Human and Social Sciences at the University of Brasília (CEP/CHS) under protocol number 6,256,491. All participants provided informed consent by signing the Free and Informed Consent Form (FICF). The questionnaire was hosted on the Google Forms platform and, following the researcher's pilot testing, was disseminated via WhatsApp, Instagram, Facebook, and email. Dissemination strategies included targeted invitations sent via direct message to followers of all identified Brazilian CSA Instagram pages.





2.4 Data Analysis

Data were analyzed using both qualitative and quantitative methods. The textual data underwent analysis and categorization following the methodological procedures of conventional content analysis (Bardin, 2000; Câmara, 2013; De Oliveira, 2015). Categorization serves to organize textual data and describe qualitative information within analytical categories. Henkel (2017) notes the inherent challenge open-ended responses pose for researchers in organizing and interpreting their meanings. This study's prior literature review on CSAs and the ethnographic research provided valuable context for understanding the responses and facilitating the analysis of the open-ended data collected via the online questionnaire. Content and semantic analysis involved deconstructing the discourse, evaluating the meaning of words and symbols, and identifying key attributes of the responses (Cendón, 2014; Henkel, 2017).

Results

3.1 Sociodemographic Data

This study investigated the primary reasons for joining and leaving a CSA and suggested strategies for strengthening these communities while considering the gender variable. Table 1 presents the demographic characteristics of the 104 participants (N=104), comprising 79 women and 25 men. Most participants reported high education and income levels, with the greatest concentration in the Federal District. Women were significantly more represented among questionnaire respondents than men. The 31-40 age group exhibited the highest concentration of women (29) and men (7).

Participants demonstrated a high level of educational attainment, with postgraduate degrees being most prevalent among both genders (47 women and 15 men). Women outnumbered men across all income brackets, particularly within the highest income group (over 10 minimum wages), which included 34 women and 11 men. The Federal District (DF) and São Paulo (SP) accounted for the most significant number of participants, with 28 women and 10 men residing in the DF and 18 women and eight men in the SP.





Table 1

Sociodemographic data

Variable	Gender			
	Female		Male	
Age	<i>f</i>	%	<i>f</i>	%
20-30	8	10,1	3	12,0
31-40	29	36,7	7	28,0
41-50	24	30,4	5	20,0
51-60	9	11,4	5	20,0
61-70	7	8,9	5	20,0
Above 70	2	2,5	0	0,0
Education	<i>f</i>	%	<i>f</i>	%
Completed elementary education	1	1,3	0	0,0
Completed high school	2	2,5	0	0,0
Incomplete higher education	0	0,0	2	8,0
Complete higher education	20	25,3	6	24,0
Incomplete postgraduate studies	9	11,4	2	8,0
Complete postgraduate studies	47	59,5	15	60,0
Income	<i>f</i>	%	<i>f</i>	%
up to 2 minimum wages	4	5,1	4	16,0
2 to 5 minimum wages	22	27,8	3	12,0
5 to 10 minimum wages	19	24,1	7	28,0
More than 10 minimum wages	34	43,0	11	44,0
State	<i>f</i>	%	<i>f</i>	%
Amazonas (AM)	0	0,0	1	4,0
Bahia (BA)	4	5,1	0	0,0
Distrito Federal (DF)	28	35,4	10	40,0
Minas Gerais (MG)	9	11,4	2	8,0
Paraíba (PB)	8	10,1	2	8,0
Pernambuco (PE)	3	3,8	2	8,0
Rio Grande do Sul (RS)	8	10,1	0	0,0
Santa Catarina (SC)	1	1,3	0	0,0
São Paulo (SP)	18	28,8	8	32,0

Nogueira and Silva Júnior (2023) analyzed women's participation in productive activities within Community-Supported Agriculture (CSA) in Brazil. Based on an online survey of 44 CSAs across 12 states, their research revealed that women constitute 45.2% of the workforce. However, only 34% own land and are responsible for production, highlighting gender inequality in management.

While the research presents varying contexts, the studies converge in demonstrating that women are significantly involved as consumers within CSAs. Yet, their participation in decision-making and production management remains limited. Despite this strong female





engagement, challenges persist in achieving gender equality across the CSA landscape, spanning from food consumption to the production and management of the agricultural enterprise. It is plausible that historical and cultural factors contribute to lower male participation, particularly in food consumption decisions. In both studies, women play a important role in food security, environmental preservation, and socio-economic development, particularly emphasizing female empowerment in rural areas.

Responses regarding reasons for leaving and remaining and suggested strategies for strengthening CSAs were organized into tables, stratified by gender. Individual responses could encompass elements relevant to multiple categories; therefore, a single response may be represented within two or more thematic categories.

3.2 Reasons to Leave a CSA

The first open-ended question explored why active CSA members might discontinue their participation. The primary reasons cited for leaving a CSA were: (a) logistical challenges and accessibility, encompassing difficulties with food collection, distance to the distribution point, delivery issues, inconvenient collection times, and lack of transportation ($f = 20$); (b) financial constraints, referring to financial hardship, increased basket costs, inability to afford the share, or the perception that the cost was disproportionate to product quality ($f = 17$); and (c) relocation, specifically changes of address or city ($f = 19$). Less frequent reasons included (d) misalignment with CSA principles, encompassing statements about a lack of collaboration, diminished sense of community, interpersonal issues, and perceived deviations from established production practices ($f = 13$); (e) changes in personal routines; including lack of time for cooking, food preparation, or contributing as a co-farmer ($f = 9$); and (f) concerns regarding product quality and origin, specifically the perceived use of pesticides or chemicals and a lack of assurance that products were organic and/or agroecological ($f = 5$). A final category, (g) "other" ($f = 29$), encompassed diverse reasons for leaving that did not align with the emergent categories, reflecting the complexity of individual experiences. Table 2 presents the categorized and tallied responses.





Table 2

Reasons to leave a CSA

Category Description	Gender	
	Female	Male
Logistical challenges and accessibility Difficulties with food collection, distance to distribution point, delivery issues, inconvenient collection times, and lack of transportation.	20	0
Financial constraints Financial hardship, increased basket costs, inability to afford the share, or the perception that the cost is disproportionate to the quality of the products.	15	2
Relocation Changes of address or city/town.	16	3
Misalignment with CSA principles Lack of collaboration, diminished sense of community, interpersonal issues, and perceived deviations from established production practices.	7	6
Changes in personal routines Lack of time for cooking, food preparation, or contributing as a co-farmer.	7	2
Concerns regarding product quality and origin Perceived use of pesticides or chemicals; lack of assurance of organic and/or agroecological production.	3	2
Other This category encompasses diverse responses, including receiving unwanted food items, discontinuation of CSA activities, initiating personal food production, and responses such as "I don't know," "Nothing would make me stop," and "It would never happen."	23	6
Total responses	91	21

The success and sustainability of CSAs depend on retaining both co-farmers and farmers. Galt, Bradley, *et al.* (2019) analyzed the reasons why members discontinued their participation in a California (USA) CSA and, among their findings, highlighted the paradox of CSA personalization. According to these authors, the personalization of CSAs—which includes the option to substitute items, select quantities, or request out-of-season produce—does not guarantee member retention, as it was not identified as a significant factor in leaving. They emphasize that improving retention rates requires "cultivating people," that is, attracting and engaging co-farmers who share the values and principles upheld by the communities (Galt, Bradley *et al.*, 2019; Galt *et al.*, 2018; Galt, Kim *et al.*, 2019).

In this study, only two participants cited reasons for leaving a CSA related to the contents of the food basket (e.g., if the basket items were not aligned with their usual consumption patterns, receiving the same produce repeatedly with minimal variation). While categorized as "other," these responses, though not directly addressing the option to choose items, are thematically related to such choices.





3.3 Reasons for Remaining in CSAs

Reasons for remaining in a CSA were categorized and quantified by gender. The categories were grouped thematically for analysis. Responses were organized into the following categories: (a) support for local and family farming, which encompasses responses mentioning support for small-scale farmers, strengthening the local economy, and promoting agroecological production. This category emphasizes the importance of a fair and healthy food system (f=42); (b) healthy, high-quality food, which includes responses related to consuming organic, fresh, pesticide-free, and flavorful produce. This category also highlights the importance of family health and nutritional value (f=38); (c) environmental sustainability, which encompasses responses indicating concern for planetary health, sustainability, food sovereignty, and conscious and environmentally responsible food production (awareness of the environmental impacts and damage that food production can cause) (f=28); (d) social and community aspects, which value human relationships, the development of solidarity networks, a strong sense of community, participation in social movements, and mutual support (f=28). The "other" category (e) was created to organize more subjective responses, such as those concerning cost-benefit ratios, ethics, and convenience (f=13). Table 3 presents the distribution of categories and the number of responses, disaggregated by gender.

Table 3

Reasons for remaining in a CSA

Category Description	Gender	
	Female	Male
Support for local and family farming Encompasses support for small-scale farmers, strengthening of the local economy, and promotion of agroecological production, contributing to a fair and healthy food system.	34	8
Healthy, high-quality food Focuses on the consumption of organic, fresh, pesticide-free, and flavorful produce, emphasizing family health and nutritional value.	31	7
Environmental Sustainability Reflects concern for planetary health, sustainability, food sovereignty, and conscious and environmentally responsible food production.	20	8
Social and Community Aspects	21	7





Category Description	Gender	
	Female	Male
Values human relationships, the development of solidarity networks, a strong sense of community, participation in social movements, and mutual support.		
Other	8	5
Total responses	114	35

Women's responses were more prevalent across all categories, with particularly strong representation in themes related to supporting local and family farming, and healthy, high-quality food. While fewer in number, men's responses echoed similar concerns, but with a greater emphasis on the importance of supporting local and family farming and environmental sustainability. The importance of a supportive and sustainable local economy was also frequently mentioned by women. They valued their relationships with farmers, the quality of the food, and the opportunity to contribute to a cause they believe in. Additionally, some women appreciated the variety of produce and the experience of receiving diverse products, which fostered culinary creativity. Family and planetary health were recurring themes among all participants. For women, CSA participation was also viewed as a form of social responsibility.

Men expressed appreciation for supporting family farming, environmental sustainability, and participation in social movements and mutual support. They also highlighted the importance of a solidarity-based economy, access to healthy food, and environmental consciousness as motivators for remaining in a CSA. Furthermore, they cited a preference for a more ethical and equitable production and consumption system, the convenience of food delivery, and connection with producer families as reasons for their continued involvement.

3.4 Suggested Strategies for Enhancing Community Engagement

Suggested strategies for strengthening CSAs were categorized and quantified by gender. Responses were organized into the following categories: (a) promotion and marketing, encompassing suggestions for broader dissemination of CSAs through various media outlets, including traditional media, social networks, and targeted marketing campaigns (f=48); (b) enhancing product and service offerings, which includes suggestions for increasing food





variety, offering greater flexibility in product and quantity selection, improving delivery options, and ensuring consistent product quality (f=17); (c) fostering co-farmer engagement and participation, encompassing responses encouraging greater co-farmer involvement in CSA activities, emphasizing the importance of regular meetings for planning and enhancing member integration and communication (f=17); (d) education and outreach, highlighting the need to educate co-farmers about CSA values and principles, the importance of agroecology, and the benefits of a more equitable food system (f=12); (e) advocacy and public policy, emphasizing the importance of governmental support and promotion (f=9); and (f) "other," a category encompassing broader suggestions such as on-farm visits, home delivery, and amenities (f=10).

Table 4

Suggested strategies for enhancing community engagement

Category Description	Gender	
	Female	Male
Promotion and Marketing Emphasizes broader dissemination of CSAs through various media outlets, including traditional media, social networks, and targeted marketing campaigns.	35	13
Enhancing Product and Service Offerings Includes suggestions for increasing food variety, offering greater product and quantity selection flexibility, improving delivery options, and ensuring consistent product quality.	14	3
Fostering Co-farmer Engagement and Participation Encourages greater co-farmer involvement in CSA activities, emphasizing regular meetings for planning and enhancing member integration and communication.	16	1
Education and Outreach Highlights the need to educate co-farmers about CSA values and principles, the importance of agroecology, and the benefits of a more equitable food system.	7	5
Advocacy and Public Policy Emphasizes the importance of governmental support and promotion.	6	3
Other Encompasses broader suggestions such as on-farm visits, home delivery, and amenities.	9	1
Total responses	87	26

Women identified the following key actions as significant for strengthening CSAs: promotion and marketing (f=35), enhanced product and service offerings (f=14), and increased co-farmer engagement and participation (f=16). They emphasized the importance of clearly communicating CSA principles, suggesting social media as a valuable tool. In-person meetings and on-farm visits were also viewed as vital for fostering member





engagement. Additional suggestions included more significant interaction among members, increased participation in collective activities, flexible share options, and the ability to select products.

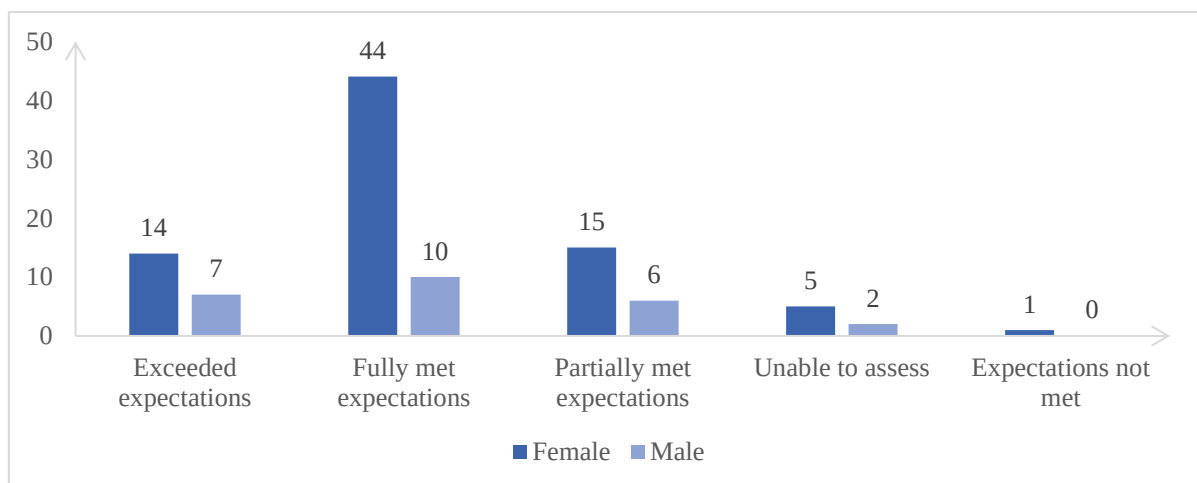
Men emphasized the importance of publicity and marketing ($f=13$), including media campaigns and public sector incentives for agroecological product consumption. They suggested developing more effective marketing platforms and increasing interaction among existing CSAs. Environmental education and the involvement of health professionals to provide co-farmers with additional information were also considered valuable.

3.5 Member Expectations for CSA Participation

Participants' perceptions of their initial expectations upon joining a CSA were stratified by gender. Most participants, both women ($n=44$) and men ($n=10$) reported that their expectations were fully met, indicating a positive experience. A subset of women ($n=14$) and men ($n=7$) reported that their expectations were exceeded, suggesting that CSA participation provided benefits and satisfaction beyond their initial anticipations. Conversely, expectations were only partially met for a smaller group of women ($n=15$) and men ($n=6$). A few participants ($n=5$ women and $n=2$ men) lacked sufficient information to assess whether their expectations were met. Finally, one woman reported that none of her expectations were met. Figure 1 illustrates the distribution of responses.

Figure 1

Member expectations for CSA participation





The analyzed results offer insights into the reasons for leaving, motivations for remaining, and suggested strategies for strengthening CSAs. This study illuminates the challenges CSAs face in member retention and community building. By examining the reasons for discontinuing CSA participation, areas for improvement can be identified, and solutions tailored to co-farmer needs can be developed, thereby promoting the sustainability and success of these initiatives.

In a cultural-behavioral analysis, the concept of metacontingencies explains complex behavioral patterns that are culturally stimulated and maintained. From a theoretical-methodological perspective of Behavior Analysis, cultural-behavioral analyses were developed to understand how culture influences human behavior, considering not only individual (ontogenetic) and phylogenetic factors but also cultural selection processes (metacontingencies).

Discussion

This study illuminates the challenges CSAs face in member retention. By analyzing the reasons for discontinuing participation, areas for improvement can be identified, and solutions tailored to co-farmer needs can be developed, thereby promoting the sustainability and success of these initiatives without compromising core principles and values. Si *et al.* (2020) argue that contemporary CSAs exhibit hybrid characteristics that can be contradictory to community principles and values, thus blurring the lines between conventional and alternative food systems. They emphasize that the producer-co-farmer connection and ecologically sound food production are unifying and strengthening factors for CSAs in Canada and China. Galt *et al.* (2019) suggest that strengthening a CSA requires "cultivating people."

Member retention is important for the sustainability, longevity, and success of Community Supported Agriculture (CSA), a food system characterized by the convergence of interlocking behavioral contingencies and metacontingencies that yield significant benefits for members and the socio-ecological environment. Member retention has been a persistent challenge for CSAs, prompting ongoing reflection on effective strengthening strategies. CSAs are vital for small family farmers initiating production, as they rely on local community support and collaboration for growth. Low retention rates can necessitate substantial and sustained effort from more engaged members and may erode the reciprocal relationship between farmers and consumers (Galt, Bradley *et al.*, 2019; Galt, Kim *et al.*, 2019).





Behavioral analysis offers conceptual tools for understanding the reasons for leaving and remaining in and suggesting strategies to strengthen CSAs. A CSA, viewed as an agricultural organism, can be interpreted as a metacontingency wherein component contingencies (e.g., farming practices, co-farmer engagement behaviors, organizational activities) produce an aggregate product (AP) or multiple APs (e.g., healthy food, a preserved environment, stable income for smallholder farmers). The context or environment that selects the component contingencies maintaining CSA operation reinforces these behaviors through member satisfaction, production viability, and perceived environmental benefits.

Behaviors valued within CSAs often become recurrent in other consumer communities, prioritizing pesticide-free food production and environmental preservation. These recurrent behaviors (e.g., awareness of seasonal product consumption, support for small local producers, commitment to sustainable agriculture) can be interpreted as macrobehaviors—socially learned operant behaviors observed in the repertoires of numerous members within a cultural system, such as alternative food networks. These macrobehaviors are maintained by individual contingencies (e.g., personal health, satisfaction) and social contingencies (e.g., community or social group approval, sense of belonging).

CSAs facilitate the transmission of cultural and behavioral lineages, promoting the dissemination of operative behaviors (e.g., agricultural practices, environmental and consumption values) among members, inter- and intragenerationally. This transmission occurs through direct interaction among members, participation in activities and events, and collective efforts. These shared values and principles may explain the most recurrent and potent contingencies within CSAs, offering a potential avenue of investigation into the customization paradox reported by Galt *et al.* (2019). Excessive customization may distort the core nature of a CSA and diminish the impact of important reinforcers, such as experimenting with new foods, the sense of belonging, and collaboration within a social group dedicated to environmental preservation and the promotion of human well-being.

Conclusion

This study explored why active members of Brazilian Community Supported Agriculture (CSAs) are motivated to either leave or remain within their respective CSAs. It also sought to suggest strategies for strengthening these communities from a cultural-behavioral perspective. Analysis of participant-provided reasons revealed a complex network





of interlocking behavioral contingencies (IBCs) that shape pro-environmental (e.g., pesticide-free food production and consumption) and pro-social (e.g., cooperation, collaboration) behaviors within the CSA context.

The results underscore the importance of considering IBCs as essential for understanding CSA dynamics. The contingencies reinforcing CSA participation can evolve, influencing members' decisions to remain or leave. Cultural-behavioral analysis, by identifying relevant component contingencies, facilitates the development of more effective strategies to strengthen CSAs. These strategies can mobilize greater member participation, promote actions supporting sustainable production and healthy food consumption, and create opportunities that foster stronger social ties among participants. In this regard, this research highlights the value of Behavior Analysis as a tool for assessing the contingencies present within food systems, such as CSAs.

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