

Research Article

Knowledge and Emotions in Socioscientific Decision-Making

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Abstract: Socioscientific issues require practical decisions that use knowledge and emotions as inputs for the decision-making process. To examine how these resources influence decision-making, this investigation was conducted from a constructionist epistemological stance, a symbolic interactionism theoretical perspective, and a grounded theory methodology. Twenty-five informants were purposefully selected based on the study's selection criteria. Data were collected through semi-structured interviews, transcribed, and analyzed using Hennink and Kaiser's strategies to achieve theoretical saturation. The analysis revealed that: (1) Knowledge of socioscientific issues was associated with emotion-related objects that elicited negative emotional responses from decision-makers; (2) These negative emotions triggered the use of related conceptual and contextual knowledge in generating decision alternatives; (3) Positive emotions motivated decision alternatives toward specific goals; (4) Decision alternatives contained both cognitive and affective components; and (5) Decisions were based on the appraisal of the overall cognitive and affective baggage of these alternatives. The findings underscored the importance of decision-makers enhancing their cognitive and affective resources and incorporating both when making practical decisions to effectively address socioscientific issues, thereby contributing to positive outcomes for individuals, societies, and the global community.

Keywords: decision alternatives; decision appraisal; socioscientific decisions; grounded theory

1. Introduction

Decision-making is a crucial skill linked to excellence and productive living (Asikhia et al., 2021), as well as to quality, efficiency, and rationality (Azhar et al., 2021). It also plays a significant role in fostering progress and development (Sari, 2023), happiness (Hamzah et al., 2021), and life satisfaction (Sari, 2022). This process is both cognitive and emotive, involving the recall of past actions and the prediction of their outcomes to generate alternative strategies. These strategies are then evaluated cognitively and affectively to inform decision making (Imani et al., 2021; Fischhoff & Broomell, 2020). Effective decision making necessitates the strategic integration of various resources to produce practical decisions that align with appropriate means and goals (Feng et al., 2022). A deeper understanding of how decisions are made offers valuable opportunities to enhance our decision-making abilities (Taherdoost & Madanchian, 2023a).

In 2015, the United Nations (UN) established 17 Sustainable Development Goals (SDGs) through the 2030 Sustainable Development Agenda, which focuses on social, economic, and environmental pillars to improve the quality of life for all (Filho et al., 2024). Achieving these goals depends on effective decision-making, which literature suggests requires further scientific investigation for improvement (Ge et al., 2024). Practical decision-making, defined as making appropriate decisions using suitable means to achieve desirable outcomes (Taherdoost & Madanchian, 2023a), is essential for various industries in addressing the UN's call for global partnerships to advance the SDGs (Barberà-Mariné et al., 2024). This is particularly important in sectors such as healthcare (Kapeke et al., 2023), education (Samsuri et al., 2023), social services (Nykänen et al., 2021), emergency response (Hou et al., 2021), and environmental management (Carrick et al., 2022). Given that different industries operate within distinct local contexts, decision-makers must consider various forms of specific knowledge and examine their roles as resources in generating practical decisions for real-world

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applications (Wu & Liang, 2024).

The factors influencing decision-making are represented by various forms of consumable knowledge, including implicit and tacit knowledge (Ortiz Barrera, 2023), rational, emotional, and spiritual knowledge (Bratianu & Bejinaru, 2023), general and specific knowledge (Mabade & Mapangwana, 2022), sensorial and abstract knowledge (Hallo & Nguyen, 2021), and contextual and conceptual knowledge (Suomala, 2020). Despite the diverse terminology, knowledge is often regarded as a cornerstone of decision-making (McLean et al., 2023), and the crucial element missing in decision-making processes (Schulz, 2023). However, the relationship between knowledge and decision-making provides limited insight into how knowledge is acquired or utilized to improve decisions (Fischhoff & Broomell, 2020).

To make practical decisions that are effective within specific contexts, decision-makers must understand the nature of knowledge, its role as a valuable decision-making resource, and its conversion into efficient actions and practices. This investigation addresses these needs within the framework of socioscientific decision-making by seeking to answer the following research questions:

1. How does knowledge influence socioscientific decision-making?
2. How do emotions influence in socioscientific decision-making?
3. How are decision alternatives generated socioscientific decision-making?
4. How are decision alternatives appraised for socioscientific practical decisions?

2. Materials and Methods

2.1. Research Design

This investigation was based on a constructivist epistemology and a symbolic interactionist theoretical perspective, which view knowledge as co-constructed through the shared interpretation of language and symbols during social exchanges between the informants and the researcher (D. Mohajan & H. Mohajan, 2022). Additionally, a grounded theory methodology was employed to uncover the meanings (Tops et al., 2024) underlying the informants' socioscientific decision-making in the context of the COVID-19 pandemic. Data were collected through individual interviews and analyzed using Hennink and Kaiser's (2022) approach to theoretical saturation, from which the grounded theory was developed.

2.2. Informants

A purposeful sampling method was used to identify the most relevant data sources for gaining insights into the situation. In this study, cases were selected based on specific criteria: enrollment as a regular student in a public high school, grade level as grade 11, age between 15 and 17 years, academic status as top-performing learners, physical and psychological fitness, and voluntary participation. A total of twenty-five informants participated in individual interviews, meeting the minimum requirement of twenty interviewees (Staller, 2021) and twenty interview sessions (Sebele-Mpofu, 2020) needed to achieve theoretical saturation in grounded theory. All informants were assessed as physically and psychologically fit by a registered nurse and a registered guidance counselor.

The informants participated in individual interviews, the primary method of data collection, to share their experiences during the COVID-19 pandemic. These interviews allowed for the co-construction of meaning, with both researchers and informants contributing to the development of meaningful data. An interview guide with trigger questions, which was translated into the local language by school teachers familiar with the area, was used. The interview instrument was validated and ethically reviewed by experts from various fields. Audiovisual recordings were made using cameras, microphones, cell phones, and laptops. The informants' profiles, presented with pseudonyms for privacy, are included in Table 1.

Table 1. Informants' profile.

Title 1	Age	Sex	Academic status
Maribel	16	Female	With High Honors
Janice	15	Female	With Honors
Mecel	15	Female	With Honors
Mary Ann	15	Female	With Honors
Glenn	15	Male	With Honors



Jacquilyn	17	Female	With Honors
Faith	15	Female	With Honors
Rogelio	15	Male	With Honors
Noreen	15	Female	With Honors
Marvin	15	Male	Top 10
Gemma	16	Female	Top 10
Noemi	15	Female	Top 10
Julian	15	Male	Top 10
Dolores	15	Female	Top 10
Philip	15	Male	Top 10
Pedro	15	Male	Top 10
Inne Jean	15	Female	Top 10
Marilou	16	Female	Top 10
Salvador	16	Male	Top 10
Estella	15	Female	Top 10
Cerila	16	Female	Top 10
Elizabeth	16	Female	Top 10
Vivencio	16	Male	Top 10
Ivy	17	Female	Top 10
Judy	16	Female	Top 10

2.3. Data Collection

The initial phase of data collection involved both technical and ethical reviews of the methodology. Consent and assent forms, in accordance with the guidelines set by the Philippine Health Research Ethics Board (2017), were obtained from the informants and their parents after they were thoroughly informed about the study. Individual semi-structured interviews were conducted with the assistance of a registered guidance counselor, who served as an observer and simultaneously assessed the informants' psychological well-being. During these interviews, informants shared their experiences during the COVID-19 pandemic, which led to the formulation of probing questions. This concurrent data collection allowed the researcher to confirm initial findings, refine the results, and provide comprehensive support for these discoveries. Between three and six interviews were conducted each day over a period of five consecutive days, with theoretical saturation being reached by the 25th session.

2.4. Data Analysis

The interviews were manually transcribed, and the transcripts were analyzed using the strategies outlined by Hennink and Kaiser (2022) for achieving saturation. The analysis followed several steps: (1) code frequency counts, which involved counting new codes in each transcript until few or no new codes emerged; (2) the comparative method, where daily batches of 3 to 6 transcripts were reviewed, and all new codes were listed for each batch; (3) the stopping criterion, which involved identifying similar codes in the first day's set of transcripts, then examining the subsequent transcripts until the stopping criterion was met after the 20th interview, followed by the final five interviews to test whether new codes might still emerge; (4) high-order groupings, which involved developing meta-themes, salient themes, or categories from the previously identified codes; and (5) code meanings, which entailed examining issues, new aspects, dimensions, or nuances within the developed categories and themes until no new information surfaced.

Throughout the data analysis process, the researcher applied (1) initial coding, which involved memo-taking and the constant comparison of transcripts to identify codes and concepts; (2) focused coding, which included revising, renaming, adding, and deleting codes to refine categories; and (3) theoretical coding, which connected codes and concepts to form themes, continuing until theoretical saturation was reached. Theoretical saturation then served as the foundation for the grounded theory developed from the analysis.

2.5. Trustworthiness

The data collection instrument, procedures, and analysis were subjected to technical examination by experts in Science Education, Psychology, and Social Science. An ethical review was conducted by specialists in Psychiatry, Biology Education, and Social and Environmental Science. Informed consent and assent forms were obtained to ensure the informants' anonymity, as well as their rights to voluntary participation, privacy, and

confidentiality.

The interviews were conducted in the informants' native language, with the assistance of a registered guidance counselor and a registered nurse to ensure their psychological and physical well-being.

This collaboration of expertise from various disciplines, along with the measures implemented to safeguard the informants' safety and data security, significantly enhanced the trustworthiness of the collected data.

2.6. Ethical Consideration

This research was approved by the Research Ethics and Review Committee of West Visayas State University on March 27, 2023 under the URERC Protocol Number WVSU.URERC-2022.GS-I_005.

3. Results

Related knowledge structures continued to develop into integrated frameworks that function as cognitive justifications for behaviors, aiming to resolve the perceived socioscientific problem situation. In the interview, informants combined their conceptual knowledge of virus transmission with their understanding of facemasks to explain why they must wear them. Their knowledge of virus transmission was also integrated with their understanding of physical distancing to explain the necessity of maintaining a one-meter distance when conversing. These enhanced knowledge structures served as their reasoning, as shared by Marilou and Jacquilyn:

- Marilou: "*Like kung magwa ka, suksuk ka facemask kay ang COVID dyan sa hangin. Mafilter kuno ang virus*" (If you go outside, you should wear your facemask because the COVID [virus] is [spread] by the air. [Facemasks] filter the virus).
- Jacquilyn: "*Kay diba gapsread ang COVID 19 tungod sang hangin...kung mag-istorya ka sir, parayu ka guid. Indi ka gid magparapit... Para mas indi pagid kasulod*" (The COVID-19 [virus] is spread by air... If you talk, you should keep a certain distance. Do not stay close [with the person you are talking with] ... this is to avoid getting infected).

This knowledge build-up also included the integration of contextual knowledge with conceptual understanding. Drawing from their prior knowledge of facemask use and physical distancing, informants incorporated their awareness of the prescribed protocols related to the actual pandemic situation. Ivy and Vivencio added:

- Ivy: "*Tam-an ka budlay sir kung indi ka magmask kay tam an ka strikto tulad nga pandemic bala aw. Gamay lang nga magwa kaw tapos waay kaw tig mask nadakop ka dayun.*" (It was difficult, sir, because if you do not wear your facemask, [the officers] were strict during the pandemic. If you go outside without wearing your mask, you would be arrested).
- Vivencio: "*Ang COVID-19 isa ka global nga situasyon. Kag tama ka delikado kay damo napatay mo...Makalalaton by physical kag istorya istorya. Indi sagi laagan lagaw. Indi magwa. May mga batas batas.*" (The COVID-19 pandemic is a global situation. It was dangerous because many have died. It was very contagious through physical contact and when talking with others. You should not roam around. You should not go outside. There were rules.)

In terms of emotions, the knowledge of the pandemic situation elicited negative emotional responses that corresponded to the informants' affective profiles of the problem. Estella, Mariel, and Janice shared the following:

- Estella: "*Pina ko gid nga nabatyagan during time nga to. Like depress. Stress. physically and mentally stressed. Nagabatyag ka anxiety, problem kag sadness.*" (What I felt that time... depression. Stressed...physically and mentally stressed. I felt anxious, problems, and sadness)
- Mariel: "*Makacontact kalang sa isa ka tao nga may COVID, malatnan ka dayun. Waay kaw kamaan kung infected [ang tawo] ukon indi... Pwede makapatay*" (If you are more distant, much safer. A contact with an infected person means you become infected too. You do not know if the person you are interacting is infected or not... Can cause death)
- Janice: "*It can spread easily... makapatay*" (deadly)

The negative affective profiles were complemented with ideal situations that expressed positive emotions as motivations to mitigate the associated problem situation. Martin described:

- Glenn: "*Kay this pandemic naduraan ko tig freedom nga magsocialize kag magwa sa balay. Kag*

mag imaw sa mga friends ko kay ako paralagaw ako abi kag palasocialize... Te, this pandemic namag-uban lang ako kay indi ko sanay kag nadulaan ko bala tig freedom magbulag... Dapat waay dun ran. Nga may imaw [na] ako nga pwede ko kaparapit sa mga tao nga close kanakon... Ang Facebook, Messenger, Youtube, IG. Kaisa gadangatan 11 mga manug-12.” (I lost my freedom to socialize because I could not go outside during the pandemic. I was not used to being restricted... I hope it would not be that way. That I should be able to go with the people I feel close with... [I use] Facebook, Messenger, Youtube, IG... Sometimes, I stay late until 11 or about 12 [in the morning].)

These negative-to-positive emotion dynamics involved behaviors that worked as attempts to resolve the negative emotion-causing component of the problem situation. Janice informed:

- Janice: *“Kung kulang sa nutrisyon, sir, ang isa ka tawo kag indi healthy tana te dasig tana malatnan. Makabato ang resistensya mo, sir. Dapat safe sa pagkaon, sir. Kay hambal nanda kuno, sir, amo ran makaano [makaparayo] ka COVID-19... Kay hambal nanda kuno sir amo ran makaano ka COVID 19 kay gabina resistensya mo kuno, sir.”* (If a person is undernourished, they are not healthy. Then they can easily get infected. Your immunity can fight [the infection]. You have to eat healthy food. They say this prevents COVID-19... Because they say that causes weak resistance against COVID, sir).

Meanwhile, the same-valenced emotions triggered conflicting behaviors that target the same component of the problem situation. Mecel referred to Glenn’s earlier statement about staying up late and said:

- Mecel: *“Bawal magpulaw. Tapos sakto gid ang oras sa pagtulog... Para ma-avoid ang social anxiety”* (You cannot stay up late. Then you need to have the rightful amount of sleep... To avoid social anxiety).

Cross-examination of Mecel and Glenn’s statements revealed conflicting behavioral responses driven by feelings of isolation, which led to staying up late for socialization, and feelings of anxiety, which were associated with the desire to obtain adequate rest and sleep.

In general, the conceptual and contextual knowledge of the problem situation provided both cognitive and affective considerations, which influenced the development of decision alternatives. The informants’ emotions played a significant role in shaping related knowledge they used to generate these alternatives. When it came to handwashing, the informants faced challenges when their preferred brand of antibacterial soap was unavailable. As a result, they sought alternative solutions that aligned with both knowledge of the actual and ideal situations. Janice, Noreen, and Mariel responded:

- Janice: *“Sundon gid ang proper handwashing”* (Follow proper handwashing)
- Noreen: *“Kung ano lang available nga babon. Bawi lang sa pulas... Kaisa sir waay gapanghugas. Gapang alcohol nalang”* (Make use of whatever soap is available. Do rub your hands more... Sometimes, I do not wash my hands. I use alcohol instead)
- Mariel: *“Gamit lang sanitizer”* (You may use sanitizer).

These alternatives also contained affective components in the form of negative emotions stemming from the actual problem situation and positive emotions as motivations to prevent unfavorable outcomes. In the interview, these emotions included their desire for safety and security, as framed in their ideal situations. Julian, Salvador, Vivencio, and Elizabeth shared:

- Julian: *“Mas safety. Maging safe, sir”* (Safer. To become safer, sir).
- Salvador: *“For prevention. Para sa imo, sir, daw ginabra mo man nga maavoid ang amo karan, sir”* (For you, sir, you do that to avoid that [COVID-19], sir)
- Vivencio: *“Para ma-prevent ang ano [COVID-19]”* (To prevent COVID-19)
- Elizabeth: *“Para indi maanohan [malatnan] ka COVID, sir”* (So you won’t get infected with COVID).

The components and consequences of the alternative frameworks formed were carefully and thoughtfully evaluated, as described by Janice, Pedro, and Dolores:

- Janice: *“Daw mas maingat ka bala tulad sa mga decisions mo aw. Naisipan mo gid mayad kun ano maayo himuon mo nga desisyon”* (You become more careful of your decisions. You really thought of what good decisions to make).
- Pedro: *“Naisipan mo gid mayad”* (You really think of it).
- Dolores: *“Kung ano maging resulta na”* (What will be the result).

This evaluation involved cognitive appraisals of alternatives for concrete results that countered the actual pandemic situation. Estela, Marvin, and Salvador informed:

- Estela: *“Indi dun mag-quarantine. Nga pwede dun bala kami, sir, kabulag tig mayad. Waay dun tig mga protocols nga dapat sundon. Patas tulad, indi dun kinanglan quarantine pass para kabakal ano gusto mo kay kang nagligad, sir, kinanglan antes ka magna, quarantine pass. Kang ligad, indi kaw kabalubilo sa mga friends mo. Tulad okay dun”* (I hope, sir, we won’t have the same [situation] as before. We do not need to be quarantined. That we are able to freely move. No more protocols that should be followed. Like now, that we do not need a quarantine pass to buy what we want, unlike before when you needed to obtain one before you were permitted to go out. Before, we were not able to interact with our friends. Now, it is okay).
- Marvin: *“...nga nagalagaw ko bala. May imaw ako nga pwede ko kaparapit, and mga memories ko kang san-o nga wala pa nag-abot ang pandemic”* (...that I can now roam around, that I have someone I can be with, and my memories before the pandemic).
- Salvador: *“Nga mahimo mo dun gusto mo. Tanan mo mahimo nga waay dun tig... [moved his hands to suggest limited movements]”* (That you can do what you want. You can do everything without limitations).

In the same way, the affective components of the alternatives were appraised based on the likeness or unlikeness of the results. Gemma, Inne Jean, and Faith focused on the desired positive feelings, while Glenn focused on the avoidance of negative emotions, sharing:

- Gemma: *“Daw mas secure ikaw, sir, nga mahambal mo nga healthy ikaw kay amo dan. The more nga safe”* (You feel more secure, that you can say you are healthy. You are safer).
- Inne Jean: *“Based sa result na. Lantawon mo ang good effect kag bad effects”* (Based on its result. You look at the good effects and bad effects).
- Faith: *“Ang matapus dun kag makaenjoy dun. Nga waay tig worry nga may COVID nga nabilin kag maglapta liwat”* (That this will end and we can enjoy. That you do not worry that COVID could spread again).
- Glenn: *“Para sa imo, sir, ginaubra mo man nga ma-avoid ang amo karan [mainfect]. Like kung may mag ubo, sir. Stop!”* (For you, sir, you do it to avoid [getting infected]. Like if somebody coughs, sir. Stop!)

4. Discussion

Decision-making relies on various forms of knowledge that guide both cognitive and emotional processes, such as evaluating outcomes, selecting preferences, and integrating past judgments into current decisions (Fischhoff & Broomell, 2020). In the context of socioscientific decision-making, knowledge guides individuals in generating decision alternatives and appraising related practical outcomes. Chen, Ge, Li, and Peng (2021) discussed this in terms of multiple data sources that enhance information management.

Decision-makers consider both conceptual and contextual knowledge, as noted by Bader, Ahearn, Allen, Anand, Coppens, and Aikens (2023). Conceptual knowledge includes categories, relationships, principles, and representations used to create strategies and identify errors (Braithwaite & Sprague, 2021), supporting reason-based decision-making. For instance, informants combined their understanding of virus transmission with pandemic guidelines to justify their reasons to wear masks and practice physical distancing. Results additionally shows how conceptual knowledge serves as a framework that can be applied across various situations. As Dohn (2021) explains, knowledge transfer involves adapting knowledge to fit the specific needs of a new context.

As decision-makers gain contextual knowledge, they develop situational awareness (Munir et al., 2022), helping them recognize patterns and respond to new challenges (Sipiorski, 2023). Contextual knowledge connects past experiences with current conditions, allowing decision-makers to make more relevant choices. Informants’ past knowledge helped them identify patterns, predict outcomes, and adjust strategies based on previous successes or failures. Pettersen, Ertesvåg, Pöysä, Vaaland, and Virtanen (2023) support this idea, suggesting that understanding the context shapes how past knowledge is applied. Literatures aligned with contextual knowledge enhancing understanding of the present, predicting future outcomes (Agnisarman et al., 2021), and evaluating risks (Briggs & Lumsdon, 2021); thereby, improving decision-making.

The integration of both conceptual and contextual knowledge plays a critical role in decision-making, enabling decision-makers to make reasoned and contextually appropriate choices. This aligns with Klaver, Sins, Walma van der Molen, and Guérin (2022), who emphasized the importance of both internal and external resources, such as experiences and

sociocultural contexts, in shaping practical decision-making. As demonstrated in the responses of the informants, drawing on various sources of knowledge enhances the decision-making process, fostering a more practical approach to resolving socioscientific issues.

In terms of its role as an affective component in decision-making, the findings demonstrate that emotions significantly influenced decisions. Particularly in the context of socioscientific issues like the pandemic, informants reported experiencing negative emotions, including stress, anxiety, and sadness, which directly shaped their decisions to mitigate the pandemic's negative effects. For example, the fear of infection and the uncertainty surrounding COVID-19 motivated them to implement precautionary measures. These findings support existing research that emphasizes the role of emotions in guiding choices, including action tendencies, that solve problems and promote positive outcomes (Tsopanova, 2023).

Emotions play a key role in decision-making, influencing our choices as either incidental or integral. Incidental emotions relate to decisions unrelated to the core issue, while integral emotions are directly tied to the main issue itself. For example, during the pandemic, some informants, frustrated by social restrictions, stayed up late to socialize. On the other hand, others, anxious about isolation, focused on getting enough rest. These conflicting responses show how similar emotions, such as stress or anxiety, can lead to different behaviors that may support or not support the main issue of COVID-19. This aligns with Action Tendency Framework, which suggests that how we interpret emotions can lead to different decisions (Campbell et al., 2023). In this sense, decision-making process became guided by its goal-setting mechanisms, which shapes how decision-makers evaluate options and make choices.

Both knowledge and emotions during the pandemic contributed to the generation of decision alternatives. Informants demonstrated flexibility when confronted with resource limitations, such as the unavailability of their preferred soap. In response, they considered knowledge of existing resources that they used in re-constructing their choices. Among which include switching to a different brand of soap, using alcohol or sanitizer, or relying on meticulous handwashing with water alone. This ability to generate alternatives, aiming for optimal and satisfactory courses of action, aligns with existing research, which emphasizes the importance of available knowledge in responding to changing circumstances and finding viable solutions (Taherdoost & Madanchian, 2023a; Taherdoost & Madanchian, 2023b).

Decision alternatives, including their action tendencies, were guided by both conceptual and contextual knowledge, as well as positive emotions such as the informants' desire for safety. They framed these alternatives as responses to the threat of COVID-19, prioritizing the prevention of infection and ensuring safety. This complements the idea that decision-makers rely on both knowledge and emotions to generate practical choices when faced with complex issues (Kóbor et al., 2023). The informants' focus on safety and illness prevention, above other goals, acted as key motivators for their behaviors, reflecting research on goal-setting mechanisms in decision making (Bairagi, 2023).

Decision-makers modify their choices to reflect the dynamic nature of decision-making. Card, DellaVigna, Jiang, and Taubinsky (2024) explained that knowledge is constantly updated to fit new circumstances, aligning with Kerzner's (2023) "phantom alternatives," where decision choices are revisited and adjusted based on changes in the situation. The informants' responses, influenced by both knowledge and emotions, highlight the importance of adapting viable decision alternatives to address socioscientific challenges.

Interestingly, alternatives related to the same goals, as informants described. Knowledge serves an instrumental role in goal setting, that decision-makers relate available knowledge to achieve the same goal. Literatures similarly relate by describing that it is the goal that defines knowledge, rather than knowledge defining goals (Chae & Shin, 2024). From this, decision alternatives were then appraised. Goal setting is an important step in decision-making.

Decision-making involves evaluating alternatives based on existing knowledge to select the most appropriate option. Informants emphasized the importance of assessing knowledge and potential outcomes, aligning with Polhill and Edmonds' (2023) concept of evaluating actions based on available knowledge and anticipated consequences. Their decisions were influenced by a desire to regain freedom from restrictions, reflecting both adaptive and posterior rationality, where choices are guided by past knowledge, the current context, and the outcomes of previous experiences (Elgendy et al., 2023). Ultimately, decisions are updated, leading to a final choice when the decision-maker feels confident.

Affective evaluations also significantly influenced decision-making, with many informants highlighting positive emotions, such as safety and security, as key motivators. They viewed the end of the pandemic as an opportunity to resume life without fear of

infection, reinforcing the idea that emotions guide decisions toward favorable outcomes (Kim, 2023). Conversely, some informants emphasized the role of negative emotions, particularly fear, in shaping decisions, demonstrating how emotional responses to infection risks prompt behaviors to mitigate harm. Decision-makers associate positive emotions with desirable outcomes, selecting options that lead to more favorable feelings. These choices are also driven by an inherent aim to avoid negative, harmful, and dangerous outcomes, which aligns with Lerner, Dorison, and Kim’s (2023) concept of negative-to-positive emotion dynamics, where emotional responses guide decisions toward outcomes that enhance positive feelings.

The meaningful presentation of the socioscientific decision-making process based on the findings of this investigation is shown in Figure 1.

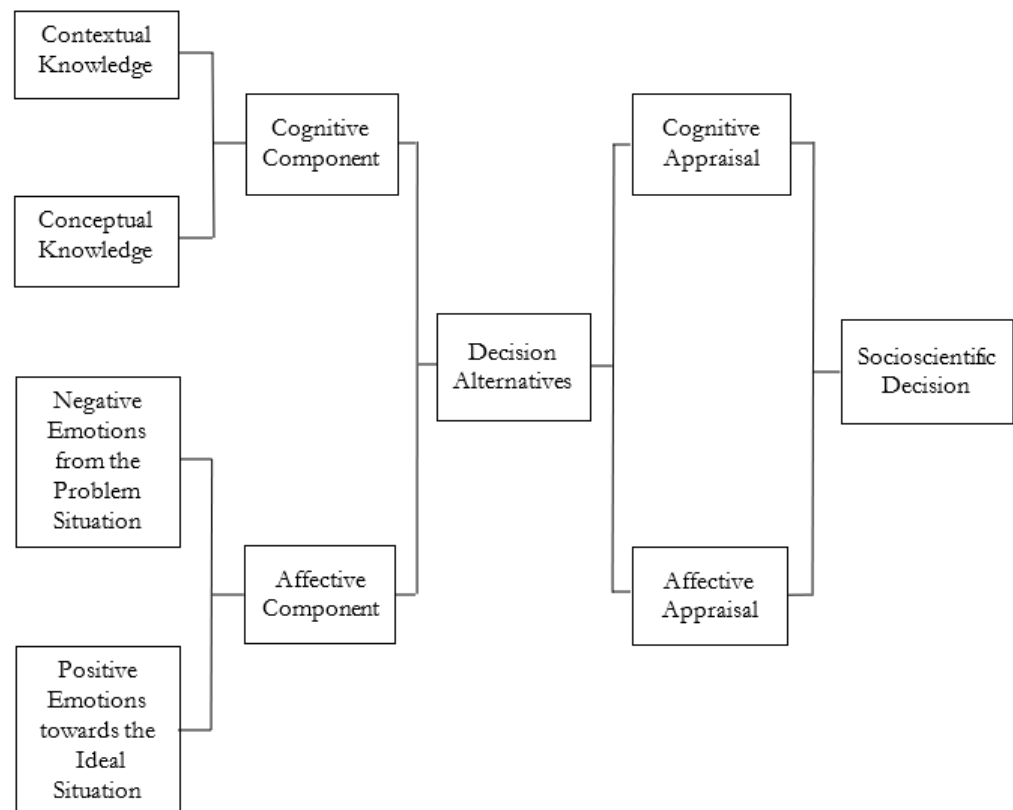


Figure 1. Socioscientific decision-making process.
Source: Author’s development.

Socioscientific decisions, in general, are determined through cognitive and affective appraisals of knowledge and emotions within decision alternatives, aimed at avoiding negative situations and achieving positive outcomes. This interplay between these components emphasizes their equal importance in decision-making, ultimately leading to decisions with favorable results amidst socioscientific issues.

5. Conclusions

Socioscientific issues require practical decision-making to address the challenges they present. Decision-makers often respond to emotion-related objects in the situation with negative emotions, which trigger cognitive, emotional, and behavioral reactions that influence their decision-making. Consequently, decision alternatives are shaped by both conceptual and contextual knowledge, along with positive emotions that guide the selection of optimal options for resolving the issue and determining necessary actions. These alternatives are evaluated based on the decision-maker’s confidence in their chosen course of action and their emotional responses to potential outcomes. This study acknowledges several limitations, including the characteristics of the informant group, the study site, the interview method, limited related literature, and the focus on the COVID-19 pandemic as the primary socioscientific issue. Future research should address these limitations by incorporating larger and more diverse samples, expanding the study sites, conducting a comprehensive review of

literature on cognition and emotion, employing varied data collection methods, and exploring additional socioscientific issues beyond COVID-19 to enhance the relevance of the research. Despite these limitations, the investigation emphasizes the significant role of knowledge and emotions in the cognitive and affective processes of decision-making, highlighting the importance of developing decision-making frameworks that integrate various types of knowledge and promote positive emotions. Such frameworks can guide individuals, societies, and global communities toward actions that improve their situations by facilitating decisions that lead to beneficial outcomes and contribute to resolving pressing societal and global challenges.

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