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during Group Decision-Making Processes“

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## **Abstract**

Group decision-making processes are equipped with countless benefits and provide as many pitfalls. The presence of various decision makers and the combination of their respectively held knowledge, education, expertise, and information is in the position to contribute to a superior decision quality, however, collectives are often subjected to a variety of biases influencing the course of the discussion, as well as the behavior of their members. While the exchange of information between individuals and the emergence of social influence factors triggering the exertion of conformity and consensus pressures on group members has received undivided attention from many scholars of various research fields, the effects of predetermined speaking orders on the group member's willingness to share information and on the development of influential group dynamics are relatively unobserved. Therefore, this work tries to contribute to the further understanding of this research gap and experimentally observes the implications of sequential decision-making processes on course and outcome of group discussions. The results of the experiments show that a predetermined order of talking has an influential effect on the intensity of information exchange between participants and can trigger the emergence of social influence factors, consequently resulting in conformity behaviors and opinion shifts of initially dissenting group members.

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## **1 Introduction**

Tremendous research effort of diverse study fields went into the analysis and observation of various aspects of group decision-making processes and a group's necessary and unique ability to aggregate the information it obtains from all its members to make an ultimate group decision received special interest (Bougheas, Nieboer, & Sefton, 2015). What sounds so easy is actually a complex and highly influenced process of discussion (Pérez, Mata, Chiclana, Kou, & Herrera-Viedma, 2016), at the end of which either consent or dissent can be reached, whereby the former condition has received a more optimistic image than the latter (Jetten & Hornsey, 2014). Even though the two phenomena could be categorized as contradicting extremes, a clear separation becomes more difficult when examining them under a group context: social influences such as conformity or consensus pressure (e.g. Baddeley, 2010) are just a few factors with the ability to affect individuals to abandon unique, diverging opinions and side with a majority opinion. The group dynamic can either persuade individuals to change their mind voluntarily and subconsciously, or can force members to masquerade their disagreement, thereby creating a kind of implicit dissent (Galinsky, Gruenfeld, Magee, Whitson, & Liljenquist, 2008; Wood, 2000; Asch, 1955).

Another important, yet rather unobserved influence factor with the ability to shape consent or dissent within groups is the speaking order of the group members. Appearing rather random or even chaotic at times for the untrained eye (Stasser & Taylor, 1991), speaking turns in face-to-face discussions can effectively steer group decisions and impose a certain level of agreement on a group and their members. Recent research attempts recognize the significance of this influence: Parkinson and Baddeley (2012) found – rather as a secondary observation – that taking turns during the advisement periods of mock-juries led to a consensus creation process during which the voiced opinions of the very first speakers influenced all subsequent jury members to opt for precisely their verdict preference, even though commonly known evidence suggested the abandonment of their decision. In line with those findings, Schöbel, Rieskamp, and Huber (2016) found that under the influence of the information cascade paradigm, decision makers integrate the information they gathered from predecessors due to a sequential talking order to reevaluate their individual opinions before venturing them, even though group members generally valued their previously held private information more than the newly obtained public information.

Although all current research efforts acknowledge a specific talking order as a causality for consensus formation, they depict talking turns in their most primal form and fail to go beyond the simple one by one-regime, which means that the focus has yet to be laid on the manipulation of the speaking turns themselves. By determining heterogeneous agents within a group decision context, by confronting those agents with predetermined speaking orders, and by simulating social influences creating pressure on the group and its members, this work intends to illuminate the connection between speaking turns and implicit dissent, as well as consent and could thereby motivate further observations to ultimately close the described research gap.

## **2 Literature review**

Group decision-making occurs if more than one individual is confronted with a problem or a task to which a solution must be found by the collective. All group members have differentiating backgrounds consisting of experiences, education, attitudes, personality traits, and motivations and therefore unique approaches of how to solve the problem proposed, however, a group context introduces the additional challenge of finding a collective solution acceptable to everybody (Kabak & Ervural, 2017). By combining those uniquely held capacities, a group has a larger collection of knowledge to draw from, a variety of viewpoints and opinions instead of just one individual perspective, and more information to share. This is especially true with increasingly complicated decision-making scenarios. When a certain level of complexity is reached, the individual decision maker will rarely be able to contemplate all relevant aspects of the problem or to have all the information necessary to solve the task successfully (Scholten, van Knippenberg, Nijstad, & De Dreu, 2007). Still, group decision-making is not limited to exclusively complex tasks and is represented in private life, economy, politics, as well as organizations. A couple deciding where to eat at night, an advertising department of a company choosing the new product campaign, or citizens of a nation making their ways to the polling station to vote for a president are dealing with different types of situations, yet they are all actors within a collective decision-making procedure (Kabak & Ervural, 2017).

Group decision-making processes are subcategorized into a selection process and a consensus process. During the selection process, group members create a solution set out of which the most

beneficial option will be chosen to solve the problem. The selection process consists of two stages: during the first phase, the collection of individual preferences of all group members takes place, leading to the creation of a collective opinion. Secondly, this collective opinion is exploited to develop a ranking of all solution alternatives available with the global information gathered before they serve as a basis for further judgement (Cabrerizo et al, 2015). The selection process is particularly important and becomes increasingly complex with a growing heterogeneity of individual knowledge of group members (Penczynski, 2016).

The selection process is followed by the consensus process. The objective of this phase is to achieve a maximum level of agreement among all group members regarding the choice of the solution alternatives. It might appear preferable that a high degree of or even complete consensus is reached (Herrera-Viedma, Herrera, & Chiclana, 2002), however, it is often not feasible or even necessary to reach complete agreement in the real world (Li, Zhang, & Dong, 2017). A clear separation of the two stages is almost impossible, although consensus processes are often described as the final phase of group discussions, during which the ultimate group answer must be forged. Regardless of the theoretical chronological ordering, both stages are in the position to strongly influence each other and can manipulate the amount and kind of information exchanged during the selection process, as well as the alternative chosen as the final solution during the consensus process. Especially in a group context, individuals are exposed to factors such as social influences, group size, differing preference distributions among group members, hierarchical structures, or asymmetric information exchange patterns, to name just a few. Those forces motivate group members to adjust their behavior to ensure they fit into the group's code of conduct and to ensure cooperation and a satisfying and mutually beneficial group decision (Scholten et al, 2007).

### *2.1 The effects of information exchange and social influences on group decision-making*

It becomes evident that collective decision-making processes are navigated by the exchange of information between group members and are latently manipulated by social influences and group dynamics emerging from interpersonal communication. Both information exchange and social influences during group decision-making processes received considerable attention from many different



research fields over the last decades, however, the role speaking orders can play during collective discussion procedures is interpreted differently: when analyzing the existing literature concerned with the exchange of information (e.g. Brodbeck, Kerschreiter, Mojzisch, Frey, & Schultz-Hardt, 2002; Stasser & Titus, 1985), the focus is laid on biases that could arise if group members are dealing with manipulated information bases, that is, if information is distributed asymmetrically among group members. Research conducted on the topic of asymmetric distribution of information consistently demonstrates that shared (commonly held) information is discussed more frequently during group decision-making processes and therefore tends to have a greater influence on the solution implemented by the group than unshared (privately held) information (Henningsen & Miller Henningsen, 2003). The simple possession of considerably more shared information than unshared information thus constitutes a predisposition to participate more during a collective discussion process. It will be easier for informationally central group members (cf. Kameda, Ohtsubo, & Takezawa, 1997) to contribute to the discussion and to find supporters for their claim, simply because others are in the possession of the same information. Individuals holding considerably more unshared information, by contrast, might find fewer cues to join in on the discussion, simply because mentioning their privately held information would not fit the current discussion topic, or because unshared information is considered incorrect or irrelevant because of fewer repetitions and fewer supporters. Thus, some group members talk earlier and more frequently, while others are silenced and more passive. This way, specific participation patterns can emerge, which are in the position to influence course and outcome of collective decision-making scenarios (Sargis & Larson, 2002).

Literature streams focusing social on influences emerging during collective discussion processes, on the other hand, approach the influential effects of speaking orders from another perspective. Research efforts conducted in the field of social psychology, in particular, claim that social forces are in the position to create speaking orders such that interpersonal connections between group members rule the decision-making process: group heterogeneity motivates individuals with comparable opinions to speak earlier and more frequently, relationships between group members facilitate the approximation of opinions and motivate interruptions and simultaneous talking, or subjective aversions felt against some participants encourage a more frequent, although hostile participation sequence

(Denny, 1985). Additionally, the confrontation of group members with differing personality traits facilitates the emergence of a certain participation order: confident speakers, dominant speakers, or motivated speakers are known to voice their opinions earlier and more eagerly than others and often take over the conversation. As a result, later or more reluctant speakers adapt a more passive role and transform into listeners rather than participants. The opinions of a view first movers can therefore influence the willingness to participate of later speakers and result in alternated discussion outcomes (Parkinson & Baddeley, 2012).

## *2.2 The connection between information exchange and social influences*

The potential connection between the exchange of information and the emergence of social influences during collective decision-making processes did not remain unrecognized. Better known as group interaction patterns, this research topic considers the sharing and receiving of data, as well as the emergence of social influence factors as a causality for the emergence of speaking orders (London & Sessa, 2007). To create a structured conversation and an improved cooperation between group members, circumstantial factors including group diversity, time pressure, composition of group members, sympathy, space constraints, or group size are all considered to orchestrate the collective decision-making processes and foster the exchange of information of individuals without creating conflicts between them (Arrow, McGrath, & Berdahl, 2000).

The emergence of speaking orders is a combination of previously learned behavior of how to act within a group context and newly gained information about the situation. Thus, they reflect the group members' personalities and capabilities, the group environment including task, time frame, and pressures, as well as structures and rules in the form of hierarchies, group norms, and group climate. Once a specific speaking order is established, it can be surprisingly difficult to change it, even if the communication pattern proves to be dysfunctional. Group participants internalize interactions and the reactions they are causing. Comparable with adult learning behavior, successful interaction sequences are saved as being applicable later or within a different group context, while failed participation patterns are sorted out. This categorization may bring positive results for one element of the group context and negative outcomes for another. Thinking about conflict avoidance within a collective, a consensus

strategy might be beneficial for the well-being of group members, while the solution picked for the common problem may suffer from a low quality. Since emotional comfort often outranks the group members' willingness to perform task oriented, individuals are taught to interact in a dysfunctional manner. While functional participation patterns are characterized by an environment in which statements voiced by members are not judged immediately, members have tolerance for differing standpoints, quiet participants are asked for their inputs, and everyone is equally encouraged to voice their opinion, dysfunctional interaction fosters aggressiveness, conflicts, and judgmental behavior which leads to passive members or participants unwilling to share private information (London & Sessa, 2007).

### *2.3 Opinion changes due to social interaction during group decision-making processes*

The interaction between the emergence of social influences and the exchange of information between group members is in the position to trigger opinion shifts of initially dissenting group members in favor of a majority. The willingness to ultimately abandon one's own viewpoints and to accept the opinions of others can be explained by two types of social influences emerging during a collective decision-making process (Kaplan & Miller, 1987; Deutsch & Gerard, 1955): informational influence occurs if the individual group member wants to make sure that the best possible alternative is chosen as the solution for the problem. Normative influence, on the other hand, manipulates the individual participant to decide according to the socially accepted standards of the group, which means that decisions are made to be rewarded with the approval from fellow group members (Henningesen & Miller Henningesen, 2003).

Informational influence describes the belief that the correct opinion must be the one held by the many and can therefore motivate the change from the minority to the majority. Both shared and unshared information can contribute to opinion changes caused by informational influences. If considered accurate and relevant, the discovery of unshared information may correct for potentially suboptimal discussion outcome, reveal new facts for most of the group's members, and motivate the reevaluation of previously formed positions in favor of a superior group decision (Gigone & Hastie, 1997). By contrast, shared information supports the correct recall of information. When held prior to the group discussion, the repetition of shared information by another participant creates a control mechanism and checks whether or not the data processed is understood correctly. Additionally, the mentioning of shared

information by fellow group members confirms the information's relevance for the discussion process (Wittenbaum, Hubbell, & Zuckerman, 1999).

Normative influence addresses the individual's effort to be socially accepted by the group (Zhang, Lowry, Zhou, & Fu, 2007) and to hide personal shortcomings at any cost (Asch, 1955). Normative influence causes opinion shifts not because of a rational reevaluation of information, but because the willingness to ensure membership within the collective seems more important than finding the best decision outcome possible. Especially within a group context, dissenting from a majority can be surprising and shifting one's personal standpoint into the direction of the commonly held opinion can cause momentary easement. This opinion change can be caused by internal or external factors: when pressure to conform to the group is felt internally, the fear of being inadequate triggers doubts into one's own judgement and motivates the adoption of the opinion of others to avoid humiliation in front of the group (Baker & Petty, 1994). External pressures, on the other hand, are created by the collective itself and become evident if actual suppression of minority opinions takes place. The smaller the group holding the dissenting opinion, the more likely it is that those group members are ignored and thus forced to ultimately adopt the majority opinion, even if their private standpoints still divert from the solution found by the group (Lau & Murnighan, 1998). A homogeneous group (Watson, Kumar, & Michaelson, 1993), a collectivistic culture (Zhang et al, 2007), a hierarchical ordering within the group (Mason et al, 2016), or weak cognitive abilities (Jones & Roelofsma, 2000) facilitate the emergence of stress when confronted with a differing majority opinion and consequently fosters the development of group conformity.

While economists claim that newly discovered information motivates group members to rethink their prematurely made decisions and hypothesize that the cognitive integration of new knowledge fosters opinion changes in favor of a majority opinion (Schöbel et al, 2016), social psychologists identified group conformity and group consensus as main drivers fostering opinion shifts, which are largely triggered by primal herding instincts to prolong the membership within a group (Baddeley, 2010).

#### *2.4 Existing research on the emergence of participation patterns*

Bearing those findings in mind, it seems obvious that the exchange of information and the emergence of social pressures can somehow be triggered or manipulated through a specific participation order applied during a decision-making process. Knowing about the implications of when and how individuals talk can contribute to an improved understanding of information flows and social influences emerging during group discussions. Appearing rather unpredictable at first glance, participation turns are actually a powerful tool used to regulate discussions with multiple individuals: circumstantial influence factors contribute to the construction of a more or less regular speaking order, which brings additional structure to the conversation and expedites discussion progress (Stasser & Taylor, 1991).

Research conducted on the emergence of participation patterns found that group characteristics such as hierarchy, group size, gender, or personality traits can manipulate course and outcome of decision-making processes: within a group context, men tend to talk earlier and more frequent than women and are less likely to compromise, subordinates are more willing to speak after their boss expressed his or her opinion to avoid contradicting the superior (Kiesler & Sproull, 1992), and group members with a more dominant personality desire to take control over the discussion, try to be as involved as possible, and are eager to convince their fellow group members of their opinions (Brown & Miller, 2000). Although those results contribute greatly to the analysis of participation patterns during collective discussions and show that there is an existing causality between a specific speaking order and the course of a decision-making process, they mainly focus on explaining the emergence of random speaking orders and their implications on group decision procedures.

#### *2.5 Existing research on the application of predetermined speaking orders*

The effects of predetermined talking sequences, on the other hand, remain rather unobserved. What comes closest to this research topic are observations of jury decision-making processes which are structured by a turn-by-turn speaking order (e.g. Parkinson & Baddeley, 2012) or observations of the implications of information cascades on the outcome of collective discussions pressure exerted on individual decisions during information cascades (e.g. Schöbel et al, 2016). Parkinson and Baddeley (2012) found that a turn-by-turn conversation order applied during jury discussions only requires a few

early speakers with the same opinion to influence the following jurors to side with them on the ultimate verdict, even if their opinion was deliberately wrong. Building on existing work examining information cascades and their implications on group decision-making processes (e.g. Anderson & Holt, 1997), Schöbel and colleagues (2016) could observe conformity behavior of group members even if only guesses and not judgements were required by participants: group members were asked to draw balls from two different urns, the first urn contained two white balls and one black ball and the second urn contained two black balls and one white ball. After the experimenter randomly chose one out of the two urns, people were asked to draw one ball and privately witness the ball's color. By applying a sequential speaking order, group members were obliged to voice their guesses which urn was randomly chosen by the experimenter. According to the color of the balls group members drew earlier, there was a clear statistical probability in favor of one of the urns. The rational choice of individuals who drew a black ball would be the urn containing more black balls and vice versa. However, the guesses of first speakers influenced the assumptions of later ones and early answers were copied (Schöbel et al, 2016).

## *2.6 Research gap*

Even though the research efforts described above contribute to the understanding of the implications speaking orders can have on group decision-making processes, they focus mainly on the emergence of social influences and on conformity behaviors. The exchange of information, on the other hand, always constitutes an obligation for participants during experimental settings and is merely used to build up pressure on group members and to underline the sequential nature of talking sequences. Thus, the effects of speaking orders on the exchange of information per se are still unobserved. Furthermore, a certain level of homogeneity between group members is assumed. In this context, homogeneity can be observed with the distribution of information among group members, as well as the aligned incentives of all participants: the experiments conducted provided group members with identical information bases and set a common goal for all members of the collective. However, asymmetric information distributions and conflicts of interest among group members could have other effects on the group decision-making process, especially if predetermined speaking orders are applied.

The research gaps described allow for a closer examination of how initially conflicting interests of group members, asymmetric information distribution, and the application of predetermined speaking orders interact with each other. This work thus contributes to the further understanding of how prefixed participation patterns can influence the information exchange between individuals within a group decision-making process and how they can support the emergence of social influences causing conformity and consensus pressures such that opinion shifts can be observed.

### **3 Information exchange during group decision-making processes**

The research topic of information exchange during collective decision-making processes originated from the field of social psychology and has been investigated intensively over the last decades. Pioneering work conducted by Stasser and Titus (1985) found that the sharing, receiving, and processing of information within a collective does not necessarily run freely, but that its exchange is in fact subject to strong biases and distortions. By conducting a seminal study, they were able to observe that decision-making groups tend to agree on suboptimal solutions for the problems proposed to them as collectives often fail to integrate unshared information into their discussions and rather focus on debating shared information. Shared information can be described as task-relevant knowledge held by all group members before the decision-making process, while unshared information is equally task-relevant, however, held by only one group member prior to discussion. By predominantly focusing on commonly known information, many groups were unable to detect so-called hidden profiles, which means that collectives often settled for problem resolutions based on shared information instead of pooling all – including privately held – information available, which would have led them to a superior alternative. Their observations showed that individuals acting as part of a group are bound to asymmetric information exchange and that shared, collectively held information is discussed more frequently than unshared, individually held information.

The experiments observing how groups are handling various hidden profile tasks proved to be particularly important for the further understanding of collective decision-making scenarios. If hidden profile tasks can be solved correctly and the pooling of all relevant information leads to the implementation of the one and only correct solution to the problem, they perfectly demonstrate why

group decision-making can achieve a higher decision quality compared to individual judgements or social combinations of individual votes (Greitemeyer & Schulz-Hardt, 2003). Correctly solved hidden profile-tasks serve as a justification of why groups are still intentionally created to work on controversial problems and to find superior decisions due to a collection of mutually enriching viewpoints. They enjoy the image of having the ability of outperforming individual decision makers and are known to be more efficient in solving particularly complex issues. Two essential aspects support this assumption: on the one hand, collectives can act as tools to detect, identify, and integrate individually held opinions about the matter discussed. This function allows all members to participate in the decision-making process, which fosters the acceptance of ultimate group decisions on the participant's side and facilitates the implementation of the solutions found during the discussion process (Brodbeck, Kerschreiter, Mojzisch, & Schultz-Hardt, 2007). Research supporting that assumption found that an increasing ratio of member participation allows for a higher identification with the decision and results in an increased level of perceived fairness and commitment to the decisional consequences (Vroom & Jago, 1988). On the other hand, group discussions are tools to combine different perspectives, knowledge, and ideas and can integrate and transform them into highly qualitative decisions and even innovations. Unlike individual decision makers, groups can channel their uniquely held information into a broader, more varied knowledge base. Thus, groups are believed to come up with superior solutions for the problem posted to them compared to single decision makers (Brodbeck et al, 2007).

However, the exchange information and the actual participation of all members invited to be part of the group has to be ensured. Otherwise, the motivations of one individual rule the course of the discussion and fosters the enforcement of his or her opinion, which makes the intended group meeting redundant. If, on the other hand, information exchange escalates and chaos embraces due to overly motivated group members, little can be taken from the discussion and the group encounter becomes equally unproductive. Knowledge about the effects of participation patterns or even predetermined speaking orders can therefore regulate the course and outcome of group decision-making processes (Bonito, Gastil, Ervin, & Meyers, 2014).

An unbiased exchange of information becomes more complicated with a growing number of group members and with an increasing task complexity. Research conducted on communication



networks suggest that the implementation of a group discussion structure can improve the exchange of information and foster decision-making qualities of collectives, especially in an organizational environment. While a centralized information exchange system where communication happens through a central communication hub is suitable for small groups and straight-forward discussion topics, a decentralized communication system provides a more independent way of exchanging information for bigger groups and more complex tasks (e.g. Matelski & Hogg, 2015). In theory, the decentralized group-structure is characterized by an evenly distributed interaction pattern between all individuals of a group. Members of the collective are acting as highly efficient problem solvers, as this communication structure allows for error correction, feedback, and the creation and merger of diverse standpoints (Tushman, 1979). This way, an unhindered exchange of information is ensured, which increases overall commitment, fosters the participation during the group discussion, and avoids information overload of individual group members. Consequently, equal access to information relevant for the problem posed to the group is ensured and group performance and decision outcomes are improved (Matelski & Hogg, 2015).

Observations of group dynamics claim, however, that actual information exchange does not happen as unrestricted and rational as suggested in the literature on communication networks. Various scholars have identified the asymmetric distribution of information among group members as one crucial causality for uneven participation patterns and claim that a group's tendency to discuss commonly known information more intensively than privately held information as a powerful trigger for biases (e.g. Brodbeck et al, 2007; Christensen et al, 2000; Stasser, Taylor, & Hanna, 1989; Stasser & Titus, 1985). One could conclude that bringing up unique information leads to an increased discussion of the newly discovered content, however, quite the opposite is the case: Stasser et al (1989) could observe that one third of shared information was repeated at least one time after their first mentioning, while only one quarter of private information was stated more than once after bringing it up. This asymmetry in information distribution triggers the emergence of so-called discussion biases, which further influence a group member's ability or willingness to speak up during collective decision-making processes.

### *3.1 The influence of asymmetric information distribution*

The distribution of shared and unshared information can be symmetric or asymmetric and consequently influences the quality of the decision the group derives at: when confronted with a completely symmetric distribution of information among all group members, every individual possesses the same level of task-relevant knowledge, not considering their unique backgrounds. Thus, mentioning unshared information derived from former experiences or education of group members could broaden the personal horizons of individual group members, however, it will never interfere with the task-relevant information possessed by the discussion participants prior to their meeting and therefore does not contribute to the problem at hand. Thus, symmetrically distributed information always makes group members arrive at the same exact decisional implications, making an actual group meeting obsolete and communication between group members unnecessary, as the decision could be made with the set of information already possessed by every individual being part of the group (Brodbeck et al, 2007).

The concept of completely symmetric information, however, is a rather theoretical idea and seldom encountered in real life. Much more practical is a condition in which the uniquely held information sets of group members differ from one another and can be categorized into a commonly known or shared, and an individually known or unshared part. The knowledge bases possessed by all individuals thus lead to different decisional implications, which makes communication between discussion participants necessary to arrive at an optimal decision (Brodbeck et al, 2007). Asymmetric information distribution can reach an extreme and create hidden profiles cited earlier in this work, which describe conditions in which only the uncovering of unshared information and its connection with shared information allows group members to choose the best possible alternative (Stasser & Titus, 1985).

The distribution of shared and unshared information thus greatly influences the course of the debate and the content discussed between group members, mainly because shared information is mentioned, repeated, and discussed more often than unshared information (Larson, Christensen, Abbott, & Franz, 1996). The recurrent use of shared information can only be achieved by stating it repeatedly, thus requiring the more frequent participation of group members holding numerous pieces of shared information compared to group members holding less shared information or even only unshared information (Stasser & Titus, 1985). However, the rather random condition of possessing the one or the

other kind of information does not seem strong enough to discourage group members with less shared knowledge to hold back during a group discussion. More dominant individuals could still wait for the right moment to mention their concerns, opinions, and viewpoints and contribute to the discussion with fresh information, however, once again social influences are manipulating individual behavior and award the discussion of shared information with a social advantage: a higher number of people equipped with the same information, as it is the case with shared information, validates its correctness, thus making somebody with the exact same information equally wrong or equally right as the majority of the group and eliminating the individual's risk of humiliation when mentioning the information. Consequently, shared information can be trusted more than unshared information and has a lower chance of revealing an intellectual shortcoming and risking a social setback (Sargis & Larson, 2002).

Additionally, group members feel a stronger urge to join a discussion when there was information mentioned which is familiar to them. Both shared and unshared information is held prior to discussion, therefore, all group members should have had the chance to evaluate the information beforehand and should be reasonably prepared to wire it into the subsequent discussion when the moment is right. When shared information is mentioned, most group members are thus informed enough to accede to the current speaker. With unshared information, individuals equipped with it are equally prepared to state it or to join in when mentioned, however, only a small group – or in the worst case nobody – is in the position to contribute to the statement originating from unshared knowledge, thus making it harder for uninformed group members to digest and elaborate it (Sargis & Larson, 2002).

### *3.2 The advantages of discussing shared information*

The findings published by Stasser and Titus (1985) motivated a series of related research efforts (Faulmüller, Mojzisch, Kerschreiter, & Schulz-Hardt, 2012). In line with their findings, other scholars could observe that collective decision-making processes are dominated by the increased discussion of commonly known information and that unique, privately held information often gets overlooked (e.g. Henningsen & Miller Henningsen, 2003; Cruz, Boster, & Rodriguez, 1997; Gigone & Hastie, 1993, 1997; Larson, Foster-Fishman, & Franz, 1998; Stasser & Stewart, 1992; Stasser, Taylor, & Hanna, 1989;

Stasser & Titus, 1985). Their findings contributed to the development of various explanations for this discussion bias, which are summarized in the following section.

Known as the so-called sampling advantage, the increased discussion of shared information is explained by simple probability. Since commonly known information is accessible by every group member, there is a higher probability that this kind of information will be mentioned earlier than privately held information, thus providing a sampling advantage for shared information (Stasser, 1992). In line with those findings, the mentioning of common information motivates the participation of others, as it is recognized as familiar and as a potential chance to contribute to the discussion with information that is somehow connected to the previously voiced argument. Thus, shared information provides more cues for fellow group members to participate than unshared information (Wittenbaum & Park, 2001).

Furthermore, commonly known information prior to the discussion provides group members with the opportunity to familiarize themselves with the knowledge base they are working with. However, when a piece of previously unknown information is shared by a colleague during the decision-making process, there is substantially little time to evaluate and integrate it (Sargis & Larson, 2002). Without this adjustment period, exclusive information is often interpreted as irrelevant for the problem at hand. This phenomenon is commonly known as the shared information bias (Stasser, Vaughan, & Stewart, 2000). Additionally, this newly discovered information might challenge initial choice preferences of group members. This scenario could lead to the emergence of the so-called common knowledge effect (Gigone & Hastie, 1993), which triggers once again the increased discussion of shared information to defend the initial choice of group members.

### *3.3 Explanations for the emergence of discussion biases*

The literature on information exchange within a group context provides two main justifications for the consistent preference to discuss commonly known rather than privately held information. One explanation theorizes that it is more probable that shared information will be mentioned earlier and more frequently during discussions, simply because more group members are in possession of that type of information (Larson, Foster-Fishman, & Keys, 1994; Stasser, Taylor, & Hanna, 1989; Stasser & Titus, 1987). This assumption becomes even more powerful if information must be recalled from memory:

once a piece of common information is mentioned, many other group members are able to contribute to the discussion. Remembering and voicing a piece of unshared information is equally likely, however, viewer people will be prepared to join in, thus a participation advantage for group members holding a larger amount of shared information is created, while individuals in possession of unshared information are being left out (Stasser, 1992).

A second explanation for the dominance of shared information during group discussion scenarios could be asymmetric pre-discussion preferences held by group members. The existence of conflicting preferences prior to the start of the discussion thus determines if unshared information is exchanged during the collective decision-making process or not. This is especially true when the distribution of information encourages the emergence of hidden profiles. As already explained above, the integration of unshared information is necessary to find the best alternative available. Consequently, the existence of pre-discussion preferences will convince group members equipped with unshared information to support the optimal alternative, while participants holding shared information will favor a suboptimal alternative (Wittenbaum, Hollingshead, & Botero, 2004). Even though this scenario should provide additional support for discovering the superior solution and for including unshared information into the discussion, Greitemeyer and Schultz-Hardt (2003) observed the opposite: unshared information brought up by group members favoring the optimal solution to the problem proposed to the group was considered to be irrelevant, incorrect, and unworthy to discuss by participants equipped with mostly shared information and favoring worse alternatives. Thus, discussions were dominated by individuals holding preference-consistent information, which led to the exclusion of members holding unshared information.

Lastly, discussion biases can be explained by social comparison mechanisms (Festinger, 1954). If individuals see themselves confronted with an unfamiliar task or with an uncertain situation, they may look to others to estimate the importance of their information. If the information they possess is frequently repeated, regularly mentioned, and interpreted as helpful by other group members, participants consider their information as being relevant and essential for finding a beneficial discussion outcome. Additionally, individuals bringing up shared information or joining in on a topic with information also held by other group members are seen as being more task-oriented, competent, and

capable (Wittenbaum & Bowman, 2004). This validation from fellow group members can encourage individuals to repeat shared information to replicate the feeling of social recognition (Wittenbaum et al, 2007). Thus, the explanation that social comparison can lead to an increased discussion of shared information relies on the repetition rather than on the mentioning of commonly held information. At this point, it should be mentioned that the advantages of discussing shared information vary according to the situation: while decision-making scenarios dealing with a low level of uncertainty can remain relatively unaffected by discussion biases, discussion processes during which expert knowledge is needed suffer dramatically if group members possessing individually held expertise rely on mentioning and repeating shared information (Stasser, Stewart, & Wittenbaum, 1995).

### *3.4 Participation and discussion biases*

As indicated above, the more shared information a group member possesses, the higher the probability that he or she will speak up and join the group discussion. However, having a large amount of shared information does not guarantee an active participation by the individual holding it. It is rather the distribution of information among group members that works as a moderating factor between the possession of shared information and the claim of speaking turns. Various scholars (e.g. Larson, Christensen, Franz, & Abbott, 1998; Stasser, Taylor, & Hanna, 1989) suggest that it is rather the urge to contribute to a topic currently discussed than the type of information itself that triggers one's willingness to speak up and participate in the group discussion. As shared information is owned by all group members, it has a higher probability of being mentioned, thus provoking the active participation of members with larger amounts of shared information while simultaneously discouraging individuals with fewer pieces of commonly known information (Bonito, 2001).

Additionally, shared information is interpreted as being more relevant to solving the task at hand than unshared information. Per definition, the former type of information is known by everybody, while the latter is only held by one group member. It is rather intuitive that the group concludes that the information possessed by all participants is considered as more important than privately held information. As the group was intentionally formed to solve the problem at hand, it appears implausible that one single person possesses the information that guarantees the implementation of the one best

solution. Thus, the collective tends to focus on the discussion of shared information, interprets private information as irrelevant, and rules out that important input could be gained by letting holders of unshared information speak. Consequently, group members holding unshared information could be affected by isolation from the group discussion or could become demotivated to participate further, as their inputs are considered to be useless. Thus, debates could be increasingly dominated by participants in possession of shared information (Bonito, 2001).

However, not only the ability of being able to contribute to a previously voiced statement constitutes the emergence of speaking orders. It is also the creation of social ties, which is triggered by aligned information bases that causes asymmetric participation patterns during group discussions. Group members subconsciously identify themselves with the collective they are a part of, even if the group formation is only of temporary nature. Consequently, a social approximation takes place and causes a steady alignment of attitudes and viewpoints. This process is fostered in homogeneous environments, that means that relatively similar group members tend to share opinions, which would result in short and uneventful group discussions, or are more willing to adopt the viewpoints of their fellow companions, which would lead to voluntary opinion shifts of initially dissenting participants due to their trust in their colleagues (Thomas-Hunt, Ogden, & Neale, 2003). The strengths of social ties during group decision-making processes and the increased willingness to comply with individuals similar to oneself can be explained by the so-called similarity attraction paradigm. This phenomenon explains that group members feel a stronger attraction to colleagues that are like them and argues that there is a higher level of acceptance for their standpoints, opinions, and arguments. Additionally, socially aligned group members are more likely to discuss with each other and contribute to the other's statements (Byrne, 1971). Socially isolated group members, on the other hand, have to fight against a higher threshold of being accepted by an otherwise homogeneous group. An asymmetric information distribution including shared and unshared knowledge can thus trigger the emergence of those phenomena and might lead to discussions dominated by group members belonging to the homogeneous subgroup (Sargis & Larson, 2002).

A decreased participation can also be motivated by the isolated group member personally. Individuals who are not in possession of information relevant to the subjective group opinion might

decide that there is no reward in participating in the discussion and develop a kind of apathy toward the collective. The adoption of a passive behavior could thus result in a decrease in speaking turns, a loss of interest in taking part in the decision-making process, and could ultimately end in so-called social-loathing. Social loathing is defined as a behavior that causes a decrease in energy and determination by some group members working within a collective, while the rest of the group remains completely productive (Gagné & Zuckerman, 1999). Bonito (2001) concluded implicitly that social-loathing leads to reduced speaking claims and a decreased quality of contributions.

At this point, it becomes evident that the cited findings are not research efforts conducted to analyze the effects of asymmetric information distribution on the emergence of participation patterns *per se*. They are rather secondary observations pointing to the fact that there is a causal connection between the possession of specific information and the willingness to voluntarily take part in a group discussion and analyze mainly the emergence of random participation patterns (Bonito, 2001). Therefore, it is rather surprising that the effects of predetermined speaking orders on the exchange of information are still unobserved.

Furthermore, the existing literature on collective sharing of information mainly focusses on the implementations a biased discussion can have on the outcome of group discussions. It is true that the tendency of discussing shared information more intensively than unshared information is interpreted as an influenced discussion process, however, it is always the consequent implementation of a suboptimal solution alternative that proves that the collective failed to complete their job properly. This task-oriented interpretation therefore leads to the belief that group members prioritize the quality of their decisions over all other factors. However, individuals within a group context pursue both task goals and social goals, which include the cultivation of relationships with group members, being considered as a constructive person, the creation of a positive image, or achieving a higher status within the collective (Wittenbaum et al, 2004). While the increased discussion of shared information during group meetings might hinder a collective at arriving at the most beneficial solution to the problem at hand, it could be instrumental for accomplishing interpersonal aims: an aligned information base constitutes a common ground, facilitates the initiation of talking sequences, and fosters understanding for one another (Clark



& Brennan, 1991). The tendency to discuss information that everybody has in common might therefore stem from internally motivated urges to belong to a group and to secure one's membership within a collective. Social forces fostering those herding instincts will be discussed in greater detail the next chapter.

#### **4 Social influences**

Classic research in behavioral psychology and sociology claim that group decision-making processes are manipulated by social rules latently dominating the course of the discussion procedure suggest that individual group members are willing to abandon their subjective opinion to fit into the existing group structures (Asch, 1955). Especially the discovery of the so-called choice shift phenomenon (Vinokur, 1971; Dion, Baron, & Miller, 1970) fostered research efforts on that topic and led to the conclusion that the interaction between group members during a decision-making process activates the emergence of social pressures and motivates the convergence of personal opinions towards a group norm (Carlston, 1977). Social influences are reigning during a collective decision-making process when the opinion of one or more individuals affect the beliefs and judgements of other group members (Zhang et al, 2007). Those social forces are in the position to motivate group members to dismiss their initially held opinions and to align themselves with the collectively shared opinion of the group, automatically accepting the group's code of conduct and belief system (Postmes, Haslam, & Swaab, 2005).

This urge to belong to a group is a deeply rooted human predisposition. The reasons for this herding behavior have been analyzed from multiple perspectives and include basic survival instincts, the elevation of self-worth and self-esteem in the case of a successful inclusion, the desire to reduce uncertainties that could not be tackled as an individual, or the facilitated attainment of goals that are unable to be reached alone. Once a group has been formed, unique group processes shaped by the group's environment, members, and goals spring into action. Behavior according to those group norms ensures persistent group belonging and simultaneously leaves an imprint on the collective's members: the multitude of influences when living within a group context requires constant compromise, cooperation, as well as collaboration by the collective's members and consequently transforms a collection of individual behaviors into a single code of conduct approved by the whole group (Matelski

& Hogg, 2015). Martin and Hewstone (2003) go so far as to claim that the urge to conform with the group, as well as the internal pressure felt to reach a group consensus are socially built constructs with the sole task to arrange life within a group context and rank among the most powerful features to maintain the dominance of social influences.

#### *4.1 The internal need for group conformity*

Conformity is known to be the strongest form of social influence when observing group dynamics (Martin & Hewstone, 2003) and can be described as a process of internal conflict resolution. This conflict arises when one group member realizes that he or she holds an opinion undeniably different from the opinion shared by the majority, causing severe discomfort and stress. Instead of voicing the diverging viewpoint, the individual therefore (voluntarily) complies with the rest of the group, immediately easing the feeling of anxiety (Zhang et al, 2007). Conformity pressure can be evidenced daily: opinion polls before elections influence citizens to vote for the candidate currently preferred by the respondents, investors are drawn to assets others already invested in, and the latest fashion trends seen in magazines are suddenly adopted by the faceless crowd (Parkinson & Baddeley, 2012).

Asch (1955) can be called a pioneer in the field of social influence research. With his early experiments, he was able to illustrate the power of a majority opinion and unanimity in social groups. Knowingly being part of a psychological experiment concerning visual judgement, small groups of male college students were presented with two charts, the one displaying one individual black line, the other showing three black lines, each having a different length. Subjects were asked to examine the two graphs and to find the one out of the three lines having the same length as the line depicted individually. Participants had to voice their results publically, and while group members instructed to unanimously state wrong answers concerning their matching suggestions were among the early speakers, uninformed subjects were only allowed to speak at the very end. Repeated rounds of correct line matching in the beginning gave the participants the understanding of group belonging and unanimity. In line with Asch's hypothesis, the group context paired with unbroken agreement among all foregoing members was strong enough to build up social pressure and influence over one third of uninformed group members to side

with the majority of the group in consecutive rounds, even if this majority was deliberately wrong. By comparison, the error rate of matching lines individually was under one percent.

The effects of group conformity on the exchange of information during a group discussion process are significant: the degree of conformity pressure felt by the individuals within a collective heavily manipulates the amount and kind of information shared with others and causes the increased repetition of already discussed information (Stasser & Titus, 1985), the more enthusiastic participation of majority members, and the loss of confidence and motivation of diverging group members to contribute to the group discussion (Enayati, 2002). Thus, complying with the rest of the group seems to become unavoidable for the initially dissenting individual and could result in an actual change of opinion due to doubts in one's personal abilities. Going along with the decision of the collective rather stems from the wish to stay a part of the group, from social forces influencing human behavior within a group context, or from the doubt in one's own judgement and capabilities and can either result in the actual change of opinion or in the agreement with the group's decision, even though the own opinion is still differing from the discussion outcome (Cabrerizo et al, 2015).

#### *4.2 The pressure to achieve group consensus*

Strongly related with the phenomenon of group conformity is the pressure to reach a consensus when facing a problem as a collective. In fact, the aim to unanimously and collectively decide for one alternative is known to be one of the most popular explanations for existence of group conformity (Martin & Hewstone, 2003). First theorized by Festinger (1950), group conformity is required as a necessary first step to ultimately facilitate the enforcement of group consensus. According to his findings, the need for consensus is particularly urgent when the group wants to attain a collective goal. The common group objective fosters loyalty to the group and strengthens the awareness of being part of a collective, thus prioritizing cohesion over making a beneficial decision (Enayati, 2002).

Consensus can be described as the result of a previous discussion within a group context with the objective to find a solution that is acceptable for every team member (Yang, 2010). As described earlier in this work, the group decision-making process is finalized by the so-called consensus process, which can be described as the phase during which discussion and the exchange of information is used

to influence group members to modify their initial opinions so that a maximum level of agreement is reached (Cabrerizo et al, 2015). Consensus processes are often dominated by individuals with the power and status to influence the behavior of the entire collective. Their opinions are interpreted as superior than the viewpoints of others, thus, an environment is created in which tacitly or openly diverging group members feel pressured to ultimately follow the direction given by the group leaders and conform with them (Estrada & Vargas-Estrada, 2013).

Stasser and colleagues (1989) found that, when confronted with the selection of the best alternative as a group, members of the collective assume that only group decisions enjoying full consensus are in fact successful group decisions, limiting the result of a group discussion to good (existence of consensus) or bad (absence of consensus) and leaving no space for hybrid decision-making outcomes. The need to be a part of a collective, however, sets group conformity drivers into motion and deems dissent within the group as a threat to the collective, triggering internal pressure to reach group consensus. Consequently, the information exchange during the discussion process leading to this desired condition of complete agreement among group members will be influenced to steer its outcome in the direction of unanimity (Cabrerizo et al, 2015).

At this point, it is important to mention that group consensus does not necessarily mean the actual and complete agreement of all group members with the discussion outcome. Going along with the decision of the collective rather stems from the wish to stay a part of the group, from social forces influencing human behavior within a group context, or from the doubt in one's own judgement and capabilities and can either result in the actual change of opinion or in the agreement with the group's decision, even though the own opinion is still differing from the discussion outcome (Cabrerizo et al, 2015).

#### *4.3 Tacit consent and tacit dissent*

Bearing in mind the findings on biased exchange of information and social influences occurring during group decision-making processes, the intersection between those phenomena constitutes a promising and rather unobserved research area. As already described above, the hybrid between informational and normative effects could be interpreted as a mutually influencing power manipulating both the course

and outcome of collective decision scenarios. While informational influences motivate opinion shifts of initially dissenting group members because of convincing, newly discovered facts, normative influences can cause opinion changes triggered by social interactions and pressures emerging within a group context. Encouraged by different factors, both informational and normative influences result in the alignment of opinions and in eventual group consensus (Gigone & Hastie, 1997). While those phenomena contribute greatly to the further understanding of opinion shifts during group decision-making processes, they fail to analyze the consequent satisfaction of complying group members with the implemented decision: some individuals could have actually changed their mind, others might privately still not be convinced of the solution alternative chosen. Thus, group members can either silently agree or disagree with the group decision. Constituting a widely popular research field during the 1950s and late 1960s, the interest in the social phenomena of tacit consent and tacit dissent subsided over the years. Yet, this intersection between the coexisting effects of a biased exchange of information and social herding instincts during group decision-making processes is still a promising field of research (Maier, 1967; Asch, 1955).

Group members who are silently consenting, or dissenting, have two things in common: they are willing to change their mind without further explanation, and they want to bring the discussion process to an end. However, both phenomena are triggered by completely different motivations. Tacitly settling in favor of one specific alternative might be activated two factors: first, silent agreement could be motivated by the discovery of convincing information. New information mentioned by another group member could motivate the originally dissenting participant to reevaluate his or her opinion and shift towards the newly discovered and more beneficial solution alternative (Gigone & Hastie, 1997). Secondly, doubts in one's subjective opinion might lead to complying to a majority opinion, as it is interpreted as implausible that a larger group of people is unanimously wrong about their preference. To avoid humiliation in front of the collective, dissenting group participants thus switch to the viewpoints held by the others (Asch, 1955). What both explanations have in common is that opinion shifts are done voluntarily and that complying group members are convinced that the opinion held by the group must be the correct one.

Tacit dissent, on the other hand, is motivated by mainly social factors: the isolation of group members voicing arguments that are not in line with the common information base described in section “3.4. Participation and discussion biases” could lead to the demotivation of excluded group members to further try to be part of the group discussion. A pluralistic ignorance (cf. Willer, Kuwabara, & Macy, 2009) could motive the dissenting individual to suppress his or her disagreement, copy the behavior of his or her fellow group members, and officially side with the majority opinion, while private disagreement is still existent, but not voiced (Bonito, 2001).

#### *4.4 Predetermined speaking order and social influences*

In contrast to research conducted on the asymmetric use of information during group decision-making processes, behavioral economists noted the causal connection between predetermined speaking orders and the manipulated course and outcome of collective discussions. Aside from the contributions made by Schöbel and colleagues (2016) and Baddeley (2010) already cited above, investigative efforts went into the observation of the effects of information cascades (Bikhchandani, Hirshleifer, & Welch, 1992). Information cascades occur within group contexts and can trigger a sequential opinion alignment during which opinions and statements of early speakers are copied by subsequent group members, regardless of individually held information that possibly contradicts the group opinion. Thus, private signals are ignored and later speakers follow the pattern established by earlier speakers (Anderson & Holt, 1997). Because of their consecutive design, information cascades can be categorized as a type of predetermined speaking order. Information cascades have been identified to cause the implementation of suboptimal decisions by the group and in line with the findings cited in this chapter, herding instincts, as well as conformity and consensus pressures rank among the most popular explanations for faulty group decision-making (e.g. Parkinson & Baddeley, 2012; Baddeley, 2010; Banerjee, 1992).

Although the manipulating effects of predetermined speaking orders in the forms of sequential jury discussions and information cascades applied during group decision-making processes have been the subject of a handful of investigations, there are still substantial research gaps to fill: while the existing literature acknowledges the fact that there is a tendency of initially dissenting group members to shift

opinions towards a majority if a turn-by-turn sequence is applied during discussions, no comparison is made to other speaking orders. The existence of talking turns that support the sharing of contradicting preferences might lead to other results.

Furthermore, none of the cited bodies of literature seem to have noticed the potential effect a specific speaking order can have on the individual's willingness to share information with his or her colleagues. Leaving aside the observations of group discussions during which participation patterns emerged due to gender, hierarchy, or status (Kiesler & Sproull, 1992) and consequently manipulated the amount and kind of information shared by fellow group members (see section 2.4. "Existing research on the emergence of participation patterns"), hardly anything is known about the connection between speaking orders and the group members' readiness to share information.

The experimental efforts conducted for the purposes of this work thus try to contribute to the further understanding of the effects predetermined speaking orders applied during group decision-making processes and compares possible implications of differing speaking orders on the exchange of information, as well as the potential emergence of opinion changes of initially dissenting group members.

## **5 Experimental Method**

### *5.1 Motivation*

Building on the scarce findings on the effects of information cascades and sequential participation turns on the processes and outcomes of collective decision-making processes, the experiments conducted for the purposes of this work try to further examine the implications of predetermined speaking orders on the exchange of information and the development of social influences during group discussions. The work reported here intends to connect the literature stream treating the aggregation of information during group decision-making processes with the research strand discussing the emergence of social influences and conformity behaviors within collectives.

When examining literature on the process of information exchange between members of a decision-making group, the existing findings point to the fact that if information is distributed asymmetrically among group members, the emergence of discussion biases is facilitated and can

contribute to the increased discussion of shared information (e.g. Stasser & Titus, 1985). If a predetermined participation pattern is added to this equation, it seems intuitive that additional effects on the exchange of information between group members can be observed. Thus, speaking orders supporting the emergence of comparably strong preference subgroups might be in the position to initiate an intensified debate between group members than speaking orders permitting the early emergence of social influences in the form of majority opinions, the isolation of heterogeneous team members, or the suppression of individually held opinions. This leads to the formulation of the following working hypothesis:

*Working Hypothesis 1: A speaking order fostering the emergence of equally strong preference fractions provokes an intensified exchange of information between group members compared to other speaking orders fostering the emergence of conformity behavior.*

Once the verbal interaction between group members has been started, the voiced solution preferences and the amount and kind of information could activate the emergence of social influence factors and could exert conformity pressures on participants. Thus, a speaking order that allows group members with similar opinions to speak first might confirm the findings made by Parkinson and Baddeley (2012) and Schöbel and colleagues (2016), however, a speaking order that supports the sequential sharing of contrasting opinions could prevent a premature approximation of opinions between group members and thus contribute to an extended discussion and to the implementation of a superior solution alternative. Therefore, the subsequent working hypothesis is proposed:

*Working hypothesis 2: Opinion changes of initially dissenting group members are more likely under the influence of speaking orders fostering the emergence of social influences and conformity behaviors than under speaking orders fostering the emergence of equally strong preference fractions.*

A detailed description of the experimental procedure, as well as the results and their discussion will be presented in the subsequent sections.



## 5.2 *Overview*

Ten four-person groups were asked to enter a computer-mediated group discussion to assist their fictitious boss with three unrelated hiring decisions. Confronting participants with various hiring scenarios and giving them the illusion of working together in one department allowed for the simulation of an organizational decision-making process embedded in a corporate environment. Participants were assembled into groups according to time slots. As soon as four people agreed to the same time window, a group meeting was organized and the experiment was conducted. Thus, groups were solely created for the purposes of this study. Prior to the start of each group session, participants were informed that the experiment was conducted to observe mechanisms arising during collective decision-making processes.

Turn by turn, group members were informed that their firm was looking for a senior human resource manager, a retail manager, and a junior arts director respectively. For each vacancy, two possible candidates had to be discussed by the group, such that one of them could be suggested to their superior to get invited for a job interview. Group members were informed that the ultimate hiring decision still was in the hands of their boss, however, they could improve their standing within the firm if the candidate they suggested was ultimately chosen for the job.

Prior to the discussion start, participants received individually held information packages containing candidate-specific data including educational backgrounds, reputations, employment histories, additional skills, or personality traits. Each hiring scenario equipped participants with differing information packages, which presented the applicants in different lights: some information packages made candidate 1 the superior choice, others led to the belief that candidate 2 was more qualified, while the remaining information packages fostered indifference between candidate choices. While those subjectively constructed information packages were created to foster the emergence of asymmetric candidate preferences among group members, applicants were always equally qualified for the jobs in question. However, the applicants' profiles could only be discovered if all information packages were completely revealed. Additionally, asymmetries in applicant preferences were installed to create differing initial opinions about candidates and to stimulate the exchange of information during group discussions.

Group discussions were concluded with a final candidate voting, during which the ultimate personal candidate suggestion could be indicated. Group members were informed that those final suggestions did not have to be unanimous. The three hiring scenarios were presented to the groups one after another, however, their ordering was alternated for every group to achieve further randomization. The sequences in which the groups were confronted with the treatments can be seen in the table below:

**SPEAKING ORDERS**

<b>GROUP 1</b>	Random Repeated	Enthusiasm Repeated	Enthusiasm Once
<b>GROUP 2</b>	Random Repeated	Enthusiasm Once	Enthusiasm Repeated
<b>GROUP 3</b>	Enthusiasm Repeated	Random Repeated	Enthusiasm Once
<b>GROUP 4</b>	Enthusiasm Repeated	Enthusiasm Once	Random Repeated
<b>GROUP 5</b>	Enthusiasm Once	Random Repeated	Enthusiasm Repeated
<b>GROUP 6</b>	Enthusiasm Once	Enthusiasm Repeated	Random Repeated
<b>GROUP 7</b>	Random Repeated	Enthusiasm Repeated	Enthusiasm Once
<b>GROUP 8</b>	Random Repeated	Enthusiasm Once	Enthusiasm Repeated
<b>GROUP 9</b>	Enthusiasm Repeated	Random Repeated	Enthusiasm Once
<b>GROUP 10</b>	Enthusiasm Once	Random Repeated	Enthusiasm Repeated

Table 1: Counterbalanced sequences of treatments

### 5.3 *Participants*

In total, 40 volunteers participated during the experiment and were assembled into ten groups of four. There were 20 males and 20 females with a mean age of 30 years. All participants were asked to perform the same tasks and conducted the experiment via the use of a private laptop. The experiment was organized und administrated with the software z-Tree (Fischbacher, 2007). The volunteers received no financial incentives or any other kind of reward for participation. It took about 90 minutes to finish all three discussions.

### 5.4 *Treatments*

Participants of the experiment were asked to join three subsequent computer-mediated group discussions. Every group discussion was conducted with a predetermined speaking order, which are named “random repeated”, “enthusiasm repeated”, and “enthusiasm once”. While speaking order “random repeated” was designed to foster the emergence of two equally strong preference subgroups

preferring competing applicants and thus create an intensified exchange of information between group members, speaking order “enthusiasm repeated” supports the development of social influences, leading to conformity behaviors of dissenting group members and a restricted exchange of information. Speaking order “enthusiasm once” offered only a single round of discussion, which leads to the assumption that participants have a higher willingness to share information with their group members within this one-shot scenario compared to their willingness to participate with the exchange of information during the first discussion round of the two other speaking orders. However, no opinion changes are expected, as discussions will not be long enough to develop social forces that are strong enough to convince participants to change their mind. The treatment procedures will be described in greater detail below:

#### *5.4.1 Speaking order A: “random repeated”*

In this hiring scenario, the group was confronted with two candidates who applied for the position of a senior human resource manager. After receiving a detailed task description in written form, all group members had the chance to familiarize themselves with information packages containing details about the two candidates who applied for the vacancy. Information packages were randomly distributed among group members, however, they divided participants into two equally strong subgroups: while two agents received information that made candidate 1 the better choice, the two other agents were presented with information that depicted candidate 2 as the superior applicant. Additionally, the subgroups were instructed to search for different qualities in candidates: while the two participants favoring candidate 1 were asked to look for a person with a university degree and a minimum of ten years of working experience, the other group wanted an applicant with a great reputation at his or her old firm and international working experience. This way, pre-discussion preferences were distributed unequally among group members and the emergence of two equally strong support groups was facilitated.

All group members were obligated to make an initial candidate choice after studying the information packages provided to them. What followed was the group discussion, which allowed participation of agents only according to a predetermined speaking order. The speaking order applied during this hiring scenario obligated one agent equipped with an information package favoring candidate

1 to open the discussion (agent A), the second speaking slot was given to an agent supporting candidate 2 (agent B), the third speaker once again initially picked candidate 1 (agent C), leaving the last participation slot to the remaining agent preferring candidate 2 (agent D). This obligating participation pattern was chosen to demonstrate to the group that there are differences in opinions between agents. Also, this alternating order of speaking was designed to foster the emergence of two equally strong preference fractions, each of them supporting another candidate and to subsequently provoke information exchange during the group decision-making process.

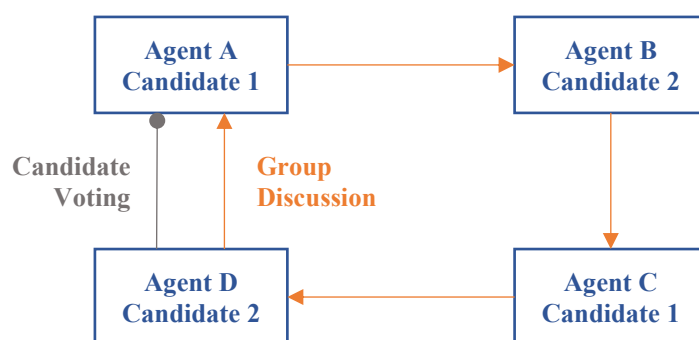
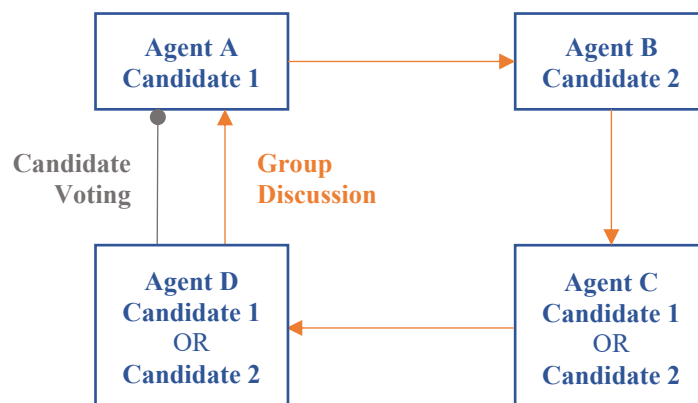


Figure 1: Speaking order during treatment random repeated

During a participation turn, it was mandatory of agents to inform fellow group members about their current candidate preference, while the exchange of information was voluntary. Candidates were allowed, but not obliged to share one piece of information about candidates contained in the information packages they received prior to the start of the discussion. Simply put, the sharing of candidate choices was an obligation, while the sharing of information was a choice. At any given time, group members could check the current candidate preferences of their colleagues, as well as if and what information was shared by them about the applicants. Each discussion round followed the predetermined speaking order (agent A – agent B – agent C – agent D) and was concluded by a summary of all current candidate preferences and information pieces revealed during the decision-making process. If a group member chose to not share any information with his colleagues, it was also indicated in the summary stage. Group members then were obligated to indicate if they are ready to proceed to the candidate voting or if they wish to prolong the group discussion. While picking “candidate voting” meant that the participant is ready to log in his or her final candidate selection, choosing “group discussion” entered the group into another discussion round. Only a unanimous decision in favor of a candidate voting terminated the group

discussion and obligated agents to state their final candidate preference. If any of the four group members chose the group discussion over a finalizing candidate voting, however, a new discussion round started during which group members once again had the opportunity to share candidate preferences and information in the predetermined speaking order. Agents were informed that there was a maximum of five discussion rounds. If the decision-making process was not prematurely terminated with an unanimously held voting preference, group members automatically entered the final candidate voting and the hiring discussion ended. Final candidate choices were not revealed to the agents afterwards.



group members are not as strongly influenced by their clear preference for one candidate at the beginning. This way, the possibility is created that indifferent group members simply comply to a majority opinion and limit their information exchange. Discussion rounds are once again subject to a predetermined speaking order: agent A, equipped with an information package favoring candidate 1,

will open the discussion. Agent B, supporting candidate 2, holds the second speaking slot, who is followed by agent C and then agent D, both indifferent between candidates. The rest of the procedure is identical with the hiring scenario described above.

#### 5.4.3 Speaking order C: “enthusiasm once”

During this treatment, participants were asked to discuss two applicants for the position of a junior arts director. Information packages, search profiles, and the speaking order during the discussion are used as during treatment 2: one agent prefers candidate 1, another agent favors candidate 2, and the remaining two members are indifferent between applicants. The group member favoring candidate 1 was obligated to open the discussion as agent A, agent B followed with support for candidate 2, while agent C and agent D spoke as the third and fourth person, respectively. In contrast to the other two treatments described above, this group discussion was only allowed to last one round. The structure of the discussion round remained unchanged. It was mandatory for group members to indicate their candidate preferences, while information exchange about applicants was voluntary. After every group member was asked to participate according to the speaking order described above once, the discussion was terminated and participants were asked to log in their final candidate selection.

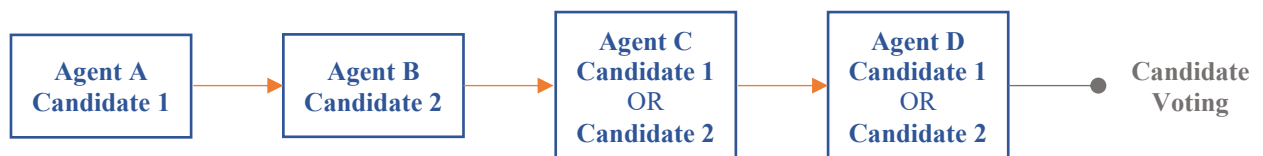


Figure 3: Speaking order during treatment enthusiasm once

## 6 Results

### 6.1 Results of working hypothesis 1

The total amount of information pieces over all five discussion rounds was used to determine the intensity of a group’s information exchange. Participants could exchange any piece of information included in their respective information packages, however, they were only permitted to share one piece of information per round. All information packages contained ten different statements about the applicants. Five pieces of background information described candidate 1, while the other five statements

gave information about candidate 2. Speaking order “random repeated” was created to foster the emergence of two preference subgroups, which is assumed to increase the willingness to exchange information between group members. Speaking order “enthusiasm” repeated, on the other hand, should activate social influence factors and thus restrict the exchange of information. Lastly, speaking order “enthusiasm once” was designed to test the implications of one-round discussion scenarios on the sharing of information between participants and observes if there is a higher willingness to share information if only one round of discussion is provided to the group members.

Working hypothesis 1 thus assumes that speaking orders fostering the emergence of equally strong preference fractions provoke a more intensified exchange of information between group members than other speaking orders. First, the comparison between speaking order “random repeated” and speaking order “enthusiasm repeated” was conducted, as both treatments offered participants five consecutive discussion rounds to share the information available to them with their colleagues. The analysis was conducted on a group level ( $n = 10$ ), as the pieces of information exchanged by all group members during a decision-making scenario were summed up over all discussion rounds. The results of a Wilcoxon-Mann-Whitney test confirm ( $p = 0.0117$ , table 2) the assumption and thus leads to the conclusion that speaking orders are in the position to manipulate the exchange of information between group members.

SPEAKING ORDER	PIECES OF INFORMATION EXCHANGED		Groups	p-Value
	OBSERVED	EXPECTED		
RANDOM REPEATED	138	105	10	0.0117
ENTHUSIASM REPEATED	72	105	10	

Table 2: Wilcoxon-Mann-Whitney test, information exchange under the application of different speaking orders

Secondly, an analysis of the first discussion round of all three speaking orders was conducted to include the results of speaking order “enthusiasm once” into the analysis. Since speaking order “enthusiasm once” provided participants with only one chance to exchange information, it was assumed that group members would have a higher willingness to share their opinions with their colleagues compared to discussion scenarios where there are more rounds included. A Chi-squared test was used to observe the

sharing behavior of all individuals ( $n = 40$ ) during the first round of discussion under the application of all three speaking orders, however, no significant effects could be observed ( $p = 0.817$ , table 3).

SPEAKING ORDER	INFORMATION EXCHANGE (ROUND 1)		Participants	p-Value
	YES	NO		
RANDOM REPEATED	33	7	40	0.817
ENTHUSIASM REPEATED	31	9	40	
ENTHUSIASM ONCE	31	9	40	

Table 3: Chi-squared test, information exchange during the first discussion round under the application of different speaking orders

The results summarized in table 3 also show that there is hardly any difference between the willingness to exchange information during the first round of discussion. The speaking orders “enthusiasm repeated” and “enthusiasm once” motivated 31 out of 40 participants to share information with their colleagues during the first round, while speaking order “random repeated” encouraged 33 out of 40 individuals to speak up during the first round. Those figures indicate that all three speaking orders motivated group members to share the information provided to them right from the beginning.

## 6.2 Results of working hypothesis 2

Opinion shifts were recorded every time a group member changed his or her mind compared to his or her initial opinion. The change in candidate preferences had to be permanent, which means that another shift back to the initial candidate choice reversed the previously done opinion change. Easier put, an opinion shift of a group member occurred if the final candidate preference differed from the initial candidate preference. Opinion shifts were analyzed per group ( $n = 10$ ), which means that if one or more participant(s) decided to change candidate preferences, the group was categorized as being subjected to changes of opinions by its members. While speaking order “random repeated” was designed to develop two competing support groups within the collective, speaking order “enthusiasm repeated” was created to foster the emergence of social influences and conformity behaviors. Like speaking order “enthusiasm repeated”, “enthusiasm once” also equipped only the two earlier speakers with clear candidate



preferences, however, participants were offered only one round of discussion, which is assumed to be too short to encourage the occurrence of opinion shifts.

Consequently, working hypothesis 2 suggests that opinion changes are more likely under the application of speaking orders fostering conformity behaviors than under the influence of speaking orders supporting the emergence of equally strong preference fractions. A Fisher's exact test confirms ( $p = 0.004$ , table 4) that assumption.

SPEAKING ORDER	OPINION CHANGE		Groups	p-Value
	YES	NO		
RANDOM REPEATED	2	8	10	0.004
ENTHUSIASM REPEATED	9	1	10	
ENTHUSIASM ONCE	3	7	10	

Table 4: Fisher's exact test, opinion changes under the application of different speaking orders

Table 4 illustrates the number of groups which were subjected to opinion shifts under the influence of the three speaking orders applied. The closer observation of speaking order "random repeated" – which was designed to create two equally strong support groups for both candidates – indicated that only two out of ten groups had group members who were willing to change their opinion. However, under the application of speaking order "enthusiasm repeated" – created to facilitate the emergence of conformity behavior due to partly missing pre-discussion preference distributions – nine out of ten groups experienced opinion shifts. Lastly, speaking order "enthusiasm once" – which is also characterized by partly missing preference distributions prior to the discussion – motivated participants of three groups to change their initial candidate preference.

## 7 Discussion

### 7.1 Discussion of working hypothesis 1

The results derived from the experiments conducted for the purposes of this work could confirm the assumption that speaking orders fostering the emergence of equally strong preference fractions are in the position to intensify the exchange of information about the candidate choices between group members. The speaking order "random repeated", which was designed to allow the emergence of

subgroups supporting competing opinions, could register an increased exchange of information than the speaking order “enthusiasm repeated”, which was designed to trigger social influences, conformity behaviors, and the creation of majority opinions. However, no significant effect of the speaking order “enthusiasm once” on the individuals’ willingness to participate during the first round of discussions could be found, as all three speaking orders were able to encourage the majority of group members to participate during the first discussion round.

#### *7.1.1 Information exchange under the application of speaking order “random repeated”*

As hypothesized, a more intensive information exchange between group members could be observed under the application of speaking order “random repeated” than under the application of another speaking order. This predetermined participation pattern equipped all group members with pre-discussion preferences in the form of preferred candidate criteria, as well as priming information packages about applicants. Under the successful application of those anchoring mechanisms, speaker one and three would prefer candidate 1, while speaker two and four both favored candidate 2. The analysis of the data collected showed that the intended priming mechanisms were successful and that every group member initially chose the applicant they were supposed to. What followed was a continuously high willingness to exchange information about candidates, even during late discussion rounds. A speaking order fostering the emergence of this heavy and simultaneously equally strong disagreement between group members about the superior candidate choice can thus be identified as a stimulus for a livelier discussion.

It seems intuitive that the mere presence of two equally strong preference sections increases the necessity to discuss more intensively about the topic at hand. The pre-discussion priming mechanisms made sure that both subgroups were similarly convinced about their standpoints, thus neither of them was willing to give up their standpoint. Consequently, an intensified exchange of information became necessary to simply let fellow group members know about personal opinions, to show colleagues why candidates were picked as initial preferences, and to convince the rest of the group of one’s candidate preference. Asking participants about their impression of that discussion scenario afterwards confirms that assumption: some individuals thought their colleagues received deliberately untrue information

about candidates and that they felt the need to correct their wrong preferences. Others argued that they suspected that information was distributed unevenly and that they shared as much information about their initial applicant choice as possible, as they wanted to show fellow group members why they preferred one candidate over the other. Research conducted by Wood and her colleagues (1994) contributes to this assumption, as they found that the existence of a variety of preference fractions within a discussion group made a more vivid exchange of information necessary, simply due to the combination of opposing opinions and the necessity to somehow align those competing viewpoints to form a final group decision.

Another possible explanation for the increased exchange of information under the application of this speaking order could be an increased motivation to convince fellow group members of one's personal preference. The decision to share information during every possible discussion round might have derived from internal dedication and an increased willingness to show group members why one's initial applicant choice would be a great candidate for the vacancy in question. Existing literature confirms this assumption and stresses that individuals with a competitive personality try to enforce their opinions and tend to fight more fiercely to imply their personal preferences than more cooperative group members (De Dreu, Nijstad, & Van Knippenberg, 2008; Wittenbaum et al., 2004).

Furthermore, the existence of a like-minded partner within the group might have given some participants hope to encourage the rest of the group to join their side and thus create a unanimous group decision. Bearing in mind the fact that it is a common belief that only unanimous group decisions are successful group decisions (Stasser et al, 1989), participants might have felt as they were unable to accomplish the task proposed to them if their final decision was not made with complete conformity. Thus, the motivation to trigger opinion shifts towards one's personal opinion might have encouraged group members to share information whenever there was a chance.

A lack of understanding for opposing candidate preferences could have been another reason for the increased exchange of information during this treatment. As all participants were obligated to share their current candidate preferences in each discussion round, fellow group members were immediately informed about their colleagues' opinions. As information packages clearly depicted one candidate as the obviously superior choice, some group members might have felt the need to correct their dissenting

team mates. This assumption can be confirmed by studies analyzing the effects of asymmetries within pre-discussion preferences among group members. Brodbeck and colleagues (2002) were able to observe that varying choice preferences leads to a more vivid exchange of information between group members and can even eliminate sampling biases. Moreover, Parks and Nelson (1999) observed that not only the willingness to exchange information was increased due to pre-discussion disagreement between group members, but that a faster, more determined, and more thorough discussion took place.

Moreover, a speaking order fostering the emergence of equally strong preference sections might also equip group members with more confidence to voice their opinions. As described by Savadori and colleagues (2001), confidence is an individual's unrestricted belief in the goodness of his or her personal choice or opinion. The support of a partner within the collective could award group members with additional strength and could further convince them that their initial choice was the right one. Thus, an increase in their self-esteem, as well as their willingness to participate during a decision-making process can be observed. Without confidence in one's own opinion, a speaking order obligating a group member to speak up could overwhelm the person in question and could limit the exchange of information to its minimum: forcing an individual to voice an opinion simply because it is his or her turn might stress the person in question and might result in the expression of the most essential information, in this case the candidate preference, while additional input relevant for the problem posed to the group might be kept private. However, the speaking order applied during this treatment equipped every participant with a like-minded partner, thus, confidence for the initially picked candidate could have emerged, consequently resulting in an increased willingness to participate during the group discussion and an intensified exchange of information during deliberation rounds.

#### *7.1.2 Information exchange under the application of speaking order "enthusiasm repeated"*

The speaking order "enthusiasm repeated" was designed to allow the emergence of conformity behaviors and resulted in less exchange of information compared to speaking order "random repeated". Thus, the working hypothesis proposed can be confirmed. A striking additional observation is that nine out of ten groups formed majority opinions even before the discussion was started. In the context of this work, a majority opinion occurred if three out of the four group members favored one candidate, while

only one dissenting participant preferred the other applicant. Those results confirm the efficiency of the speaking order applied, as only the first two speakers were equipped with information packages clearly indicating that candidate 1 or candidate 2, respectively, were the better choice, whereas the third and fourth speaker received information that made both applicants an equally good fit for the vacant position in question. Those results confirm that the emergence of a majority opinion could activate social influences and thus hinder the exchange of information between group members. One possible explanation could be that the dissenting individuals saw no chance to convince their colleagues of their candidate preference, simply because too many of them preferred the other applicant. Therefore, they did not feel the need to stand up for their candidate and chose to withhold information and decided to share less information with their group members. Other scholars arrived at the same conclusions. Boster and Mayers (1984), for instance, could observe that discussions seem to die out within homogeneous groups, especially after the exchange of preferences. They argue that the prolonged sharing of information becomes unnecessary, as most of the group's members have already aligned preferences.

Furthermore, the presence of majority opinions might have induced doubts in one's personal candidate choice. If an opinion is shared by all group members except for one, the latter might suspect that there was something wrong with his or her information, that there was a misunderstanding about the instructions, or that colleagues are simply better informed. Thus, those dissenting participants might be discouraged to share the information available to them and forfeit their right to talk. This assumption is in line with the results cited earlier in this work and can be triggered by doubts in one's own beliefs and abilities, by the fear to expose any kind of personal shortcomings (Asch, 1955), and by the belief that the group must be right, simply because they are in the majority. Additionally, Nemeth (1986) argues that a comparison process is activated within the dissenting individual: if substantial differences are noticed by the minority when observing the majority, immediate inadequacy and discomfort is felt if the dissenter is not completely convinced of his or her opinion, which leads to a decreasing level of confidence and a limited willingness to share arguments defending the dissenting opinion with the rest of the group.

When analyzing the possible reasons for a limited information exchange caused by speaking orders allowing for the emergence of social influences, majority opinions, and conformity behavior, the

phenomena of tacit dissent and tacit consent described earlier in this work spring to mind. Dissenting individuals might have limited their argumentation in favor of their candidate choice the moment they realized that they are in the minority. Consequently, the rest of the group might have interpreted the minority's silence on the matter as an implicit confirmation of their opinion and saw a chance to end the discussion and proceed to the final candidate voting. The unwillingness of the dissenting group member to share any information that contradicts the majority opinion together with the unanimity of the rest of the group could have resulted in a less enthusiastic exchange of information. Noelle-Neumann (1993) observed similar behaviors and hypothesized that the existence of majority opinions could trigger the emergence of a so-called spiral of silence. According to her, dissenters see two possible scenarios for their future participation behavior within a group dominated by a unanimous majority: either they comply to the opinion of the many, abandon their initial standpoint, and voice arguments in favor of their standpoints, or they limit their speaking turns to a minimum and silently sit through the discussion without any comment, if possible. Thus, silence on the matters discussed during the decision-making process is chosen to avoid a complete isolation of the group or to escape any kind of confrontation, which consequently decreases the exchange of information between group members and results in shorter, and less vivid group discussions.

#### *7.1.3 Information exchange under the application of speaking order “enthusiasm once”*

No increased willingness to share information during the first round of discussions under the application of speaking order “enthusiasm once” could be observed. All speaking orders could record a high participation rate of individuals and were therefore in the position to motivate the majority of group members to share their opinions about candidates during the first rounds of the decision-making scenarios. This high rate of motivation could have been triggered by the task itself. As all individuals were instructed that they would participate in a group discussion, they could have interpreted the sharing of information as their obligation. Moreover, the novelty of each hiring scenario could have motivated participants to share information immediately. Every new candidate description could have encouraged group members during each discussion scenario to participate with a new piece of information. Furthermore, the behavior of early speakers might have served as a model for their subsequent group

members. The willingness of group members who were awarded with the first speaking slot to share a piece of information with their colleagues could have created a ripple effect and consequently led to a higher willingness to contribute to the group discussion with the exchange of information.

## *7.2 Discussion of working hypothesis 2*

The assumption that opinion changes are more likely under the influence of speaking orders fostering the emergence conformity behaviors could be confirmed. This is evident by the fact that the speaking order “enthusiasm repeated”, which awarded the two earlier speakers with explicit, but differing candidate preferences, while the two later speakers did not receive any prior priming, could encourage members of nine out of ten groups to permanently change their opinion about candidates. Thus, it can be concluded that this particular speaking order contributed to the development of social pressures and the emergence of conformity behavior within groups, consequently triggering opinion shifts of some participants. This result is especially surprising in connection with the experiments conducted in this work, as opinion shifts were completely unnecessary: all candidates were equally qualified for the respective job vacancies, merely pre-discussion preferences and information packages were distributed asymmetrically among group members, leading to the formation of differing opinions.

The speaking order “random repeated”, on the other hand, equipped all group members with equally distributed candidate preferences prior to the discussion and obligated participants to speak in a sequence with constantly alternating candidate preferences, which means that every speaker favoring candidate 1 was followed by a speaker preferring candidate 2. This predetermined participation pattern thus contributed to the development of two subgroups with competing candidate preferences. In line with the working hypothesis proposed, it could be observed that only two out of ten groups were subjected to opinion shifts, thus, this speaking order hindered the alignment of candidate preferences.

Lastly, the speaking order “enthusiasm once”, which constitutes a one-round version of the speaking order “enthusiasm repeated”, yielded comparable results. While this order of speaking also equipped only the first and the second speaker with clear, yet conflicting pre-discussion preferences, group members were given only one round to exchange information about the candidates. This

contributed to opinion changes in three out of ten groups. The following discussion will present possible explanations for the outcomes of the experiments conducted for the purposes of this work.

#### *7.2.1 Opinion changes under the application of speaking order “random repeated”*

Only two out of ten groups had group members who were willing to permanently change their minds about candidates under the influence of a speaking order fostering the emergence of equally strong support teams both candidates presented to the group members. Thus, an increased willingness to insist on one’s initial opinion could be observed. This striking firmness on initially made choices might be strengthened by the existence of a fellow group member favoring the same solution alternative. Early results from Asch (1955) support this assumption: his experiments conducted on the effects of peer pressures and majority influences in group decision-making scenarios cited earlier in this work found that a unanimous majority opinion fosters the emergence of doubts and insecurities regarding the differing viewpoint of a single later speaker and can motivate this dissenting participant to blindly agree with his or her fellow group members, even if the opposing participant is completely correct, while the others are deliberately and obviously wrong. However, behavior changes immediately in the presence of a group member supporting the views of the dissenter. The encouragement of a truthful partner (cf. Asch, 1955) equipped dissenting group members with confidence and fostered their willingness to publicly disagree with other group members and to insist on their initially held opinions. Speaking orders that allow for the emergence of equally strong preference sections automatically equip group members with colleagues sharing their opinions. The support of their respective partners then awards the subgroups with increased confidence that their viewpoints matter, which prevents blind opinion shifts and the emergence of majority opinions.

Furthermore, if a group discussion is manipulated by the application of a speaking order which fosters the creation of two equally strong subgroups, it could be assumed that both preference fractions will reconfirm their memberships with the permanent insistence on their respective candidate choice through all subsequent rounds. The development of a group within a group could thus encourage the emergence of subgroup conformity behaviors, consequently eliminating the possibility of opinion changes (Baddeley, 2010).



Additionally, the distribution of choice preferences among group members prior to the start of a discussion can be a powerful trigger and can contribute to the increased insistence on one's initial opinion. Due to the priming effects of the asymmetrically distributed information packages and candidate preferences, participants might have made up their minds about the applicants presented and could have considered any new piece of information shared during discussion rounds as either incorrect, irrelevant, or untrue. This assumption is confirmed by post-discussion statements of participants, as many of them were convinced that their colleagues were equipped with intentionally wrong information, which motivated a lot of the volunteers to insist even harder on their initial opinion and on the superior quality of their information. This self-confirming behavior was also observed by other scholars: for instance, English and colleagues (2005) were able to confirm that members of a decision-making group are more influenced by information they receive prior to the discussion than by information that they hear during the subsequent discussion.

Early results derived from experiments conducted by Deutsch and Gerard (1955) led them to the same conclusion. They could observe that people consistently trust their own judgement more than the judgement of others, especially when their initial choices were publicly known, and named this phenomenon self-normative influence. Like normative influences discussed earlier in this work, self-normative influences motivate individuals to conform to a socially preferred opinion, however, self-normative influences convince group members to stick with their own opinion. Their conclusion is directly applicable to the situation at hand. The speaking order applied during this treatment sequentially contrasts the supporters of competing candidates. Any of the candidates would want to confess that their initial choice was wrong, thus, initial choices are kept till the end and opinion changes are abandoned.

The speaking order applied equipped all participants with their individual information packages containing important background knowledge about the candidates. In combination with the evenly distributed, but differing candidate preferences, those packages were used to choose initial candidate preferences. Those priming mechanisms could have been strong enough to motivate group members to fight for their initial choices. Especially with the support of other group members, individuals might want to defend their candidates and thus be opposed to opinion changes. This assumption can be confirmed by findings of other scholars: once an opinion has been formed by a group member,

Greitemeyer and Schultz-Hardt (2003) could observe that many individuals showed defensive tendencies and were unwilling to accept any other standpoint than their own. Furthermore, Tavris and Aronson (2007) found that the formation of initial opinions prior to the start of a discussion forces a group member to behave accordingly during the subsequent deliberation process. That means that strong anchoring mechanisms, as well as the support of fellow colleagues sharing the same opinion awards a group member with enough encouragement to insist on his or her standpoint.

### *7.2.2 Opinion changes under the application of speaking order “enthusiasm repeated”*

The results of the experiments conducted show a clear tendency of group members to conform with each other under the application of this speaking order. The opinion shifts were triggered by the emergence of majority opinions and resulted in a unanimous group decision in favor of one of the candidates. All participants assigned with speaking slot one and two acted as expected and chose respectively candidate 1 and candidate 2 as their initial choices. If the two later speakers – who received information packages that introduced applicants as equally qualified – coincidentally preferred the same candidate, than a majority opinion occurred. For instance, if agent C and agent D both decided that applicant 2 would be a better choice, than they formed an alliance with candidate B, thus, three out of four group members and consequently the majority initially voted for candidate 2. Surprisingly however, six out of nine opinion shifts were performed by group members with a pre-discussion candidate preference, which stands in direct contrast to the observations made under the application of the speaking order “random repeated”. Consequently, it can be concluded that speaking orders which foster the emergence of majority opinions are strong enough to convince even individuals with pre-discussion preferences to comply with the rest of the group.

Many of the participants who decided to shift their preferences towards the majority opinion stated that they thought their information was not correct, that their team members might have known something about candidates that they did not, or that they misunderstood the task and therefore initially made the worse choice. Those statements confirm the results described by Asch (1955) cited earlier in this work and ultimately share one meaning: when the majority of the group agrees on an issue, then the majority has to be right. Opinion shifts are consequently triggered by the assumption that if many

individuals share one viewpoint unanimously, it is very unlikely that all those people are wrong. Thus, majority judgements are suspected to be correct (Zhang et al, 2007). Baker and Petty (1994) formulated comparable conclusions and argue that the feeling of being inadequate or out of place with one's dissenting opinion motivates minority opinion-holders to comply with the rest of the group.

The remaining three opinion-shift scenarios were performed by group members without an initial candidate preference. While only the first two speakers were equipped with clearly priming candidate preferences and information packages, the two later speakers received information packages that depict both applicants as equally qualified for the vacant position and were not instructed to search for any specific qualities of candidates beforehand. It can be assumed that this lack of intensive priming is the main reason for the increased number of opinion changes. Without this initial anchor, it seems plausible that group members will not insist on their initially made candidate choices. When asking participants afterwards why they were willing to give up their initial opinion, they all stated that they were not intrigued to support their initial opinion, as they were indifferent about the candidates. Others replied that the information they gathered through the discussion equipped them with a clearer picture of both candidates, as the information packages they received prior to the start of the decision-making process gave them no clear indication about candidates. Consequently, their initial preference could rather be interpreted as a guess than an actual opinion about the qualities of the applicants. The influence of pre-discussion preferences has been widely discussed in the existing literature. Research conducted by Stasser and colleagues (1989) or Kaplan and Miller (1987), for instance, describes a strong initial opinion about solution alternatives as a powerful manipulator or even predictor of the outcome of the subsequent group discussion. Without this initial priming mechanism, participants might have entered the decision-making process without the goal to fight for their personal preference, which resulted in a rather unenthused attitude, an impartial discussion behavior and a more promising environment for opinion shifts.

### *7.2.3 Opinion changes under the application of speaking order “enthusiasm once”*

Under the application of the speaking order “enthusiasm once”, the majority of groups were composed of members who insisted on their initial opinion. Even though only the first two group members were

equipped with pre-discussion preferences and pertinently influencing information packages favoring one applicant over another, it is not surprising that the one-round design of this treatment did not offer enough opportunities to motivate group members to shift their opinions towards the other candidate. The structural constraint that group members have only one chance to share a piece of information with their colleagues obviously limits the number of arguments available to the collective and consequently lowers the probability that individuals deviate from their initial candidate choices. In the best-case scenario, during which every participant willingly shares a piece of information with his or her colleagues, a total of only four arguments was available to the group. The lack of subsequent opinion shifts leads to the conclusion that those arguments were either not powerful enough to motivate a reevaluation of candidates, or that the mere number of arguments was too small to convince participants to switch sides. This assumption is confirmed by existing findings observing the effects of time pressure on group decision-making processes, as group discussions conducted under the influence of a close deadline fail to accumulate enough new information to motivate permanent shifts in candidate preferences (Burnstein & Vinokur, 1977; Anderson & Graesser, 1976).

Furthermore, group members might not have had enough time to integrate the new information provided to them. Immediately after receiving their individually held information packages about candidates, participants were asked to indicate their initial applicant preference. The information provided to the group members was thus used to form opinions about candidates and was therefore a justification that one applicant constitutes the superior choice. A single round of discussion after that process simply provides not enough time to initiate an opinion shift-process. Even if arguments contradicting one's initial standpoint are presented, their evaluation and integration would take longer to result in a preference switch. Findings presented by Kruglanski and Webster (1996) can confirm this assumption, as they were able to observe that time pressure exerted on decision-making groups increases the subjective importance felt towards one's initial opinion.

Additionally, the one-shot character of the treatment might have facilitated the emergence of a self-interested behavior by group members. Prior to the start of the discussion, all participants were informed that they could improve their standing within the firm if the candidate they ultimately preferred would also be the one chosen for the vacant position at the firm. Thus, group members received an

intrinsic motivation to insist on their initial candidate choice. Simultaneously, all volunteers were told that this decision scenario will entail only one round of discussion before the final candidate choices had to be revealed. The outlook that there will be no future cooperation between the group members paired with the possibility that the insistence on one's personal opinion might yield a pay-off thus could motivate a group member to deviate from the idea to consider anything else than their primary choice preference. This kind of behavior can usually be observed during game-theoretical observations (e.g. Lee, 2008; Mason et al, 2016).

Overestimation of the individual opinion could be another explanation for the insistence on initial preference choices. This assumption can be best explained by results derived from observations of so-called judge-advisor systems. In experimental studies, judge-advisor paradigms are used to model real world situations in which an individual decision maker – the judge – may seek the recommendation of one or more elected advisors before he or she makes a final decision. It seems plausible that individuals tend to ask for help before they settle for a final decision, especially if they are dealing with complex problems. This kind of interactive decision-making style is particularly common in organizational environments (Savadori, Van Swol, & Sniezek, 2001). During experimental judge-advisor paradigms, the roles of judge and advisor are usually distributed randomly among participants. While the judge is asked to indicate his or her initial opinion about some decision-making task presented to him, the advisor is kept in the dark about the judge's choice and is asked to provide the judge with suggestions about the problem at hand. The judge then takes this advice under consideration and may, but is not obliged to, adjust his or her initial choice. Even though there are some research results that stress the benefiting effects of this decision-making structure (e.g. Schotter, 2003; Heath & Gonzalez, 1995), the majority of judge-advisor literature points to the fact that judges are often immune to the recommendation of others and stick to their initial preference. Reasons for that are varied: Kruger (2003), for instance, traces this stubbornness to an egocentric bias, meaning that individuals tend to overrate their own opinion and consider it as superior compared to others. Even if the advice was received prior to the disclosure of the decision task and even in completely new situations, the recommendations of advisors were often ignored by the judges in charge.

## **8 Conclusion**

The purpose of this work is to examine the effects of predetermined speaking orders on the course and outcome of group decision-making processes in an organizational environment. By confronting ten four-person groups with three different hiring decisions regarding fictitious vacant positions at their firm, a discussion scenario within a corporate environment was created. Participants were introduced to two potential candidates and were equipped with asymmetrically distributed information packages containing information about their backgrounds, educations, abilities, personality traits, or images. While some information packages depicted candidate 1 as a better choice, others described candidate 2 as the superior applicant, or let both applicants appear as equally qualified. After indicating an initial candidate choice, group members were allowed to discuss the candidates during a group discussion. Each decision-making scenario was strictly controlled by a predetermined speaking order, which was created to influence both the exchange of information between individuals, as well as the emergence of social influence factors which could lead to conformity behaviors and opinion shifts of initially dissenting group members.

Two working hypotheses were formulated: while the first assumption proposes that a speaking order fostering the emergence of equally strong preference fractions each supporting competing solution alternatives within the group is in the position to intensify the information exchange between group members compared to other speaking orders, the second proposition suggests that opinion changes are more likely during group decision-making processes which support the creation of social influence factors and consequently the emergence of majority opinions.

The results gathered with the experiments conducted showed that speaking orders can in fact manipulate the amount of information exchanged during group discussions, as well as trigger an alignment of originally dissenting opinions: groups which were put under the influence of a predetermined participation pattern dividing it into two support groups with differing preferences engaged in a more vivid discussion and therefore showed an exchanged a more pieces of information between group members than groups which were discussing in a sequence fostering the emergence of social influences. Additionally, speaking orders which equipped collectives with equally strong subgroups were less likely to be manipulated by conformity pressures and thus reported a low number

of opinion shifts. Decision-making scenarios under the influence of sequential talking turns supporting the development of interpersonal pressures, on the other hand, were the subject of majority influences and opinion shifts.

Yet, the experiments had various limitations. An extension of the sample size could provide future experiments with a larger variety of results. Additionally, complete anonymity of group members during discussions could not be guaranteed, which might have resulted in a biased behavior. Furthermore, group members did not receive any financial reimbursement for their participation, which could have influenced their motivation during discussions. Also, the use of computers to conduct the group discussion might have had a dampening effect on the emergence of social influence factors and could have resulted in opinion changes mainly performed because of informational, rather than normative influences. Therefore, the results derived from the experiments serve rather as observation of trends and depict tendencies of behavior of individuals within a group context under the influence of a specific speaking order and future research efforts thus should control for those shortcomings.

Still, the implications of speaking orders on group decision-making processes provide a variety of future research opportunities. One promising topic of investigation constitutes the further observation of the phenomena of tacit dissent and consent. The structural limitations of the experiments conducted in this work did not allow for a clarification whether opinions of initial dissenters were changed voluntarily or mandatorily. Therefore, future research could aim at observing the motivation behind opinion changes. Moreover, the introduction of group leaders and their interplay with predetermined speaking orders might provide another interesting topic of investigation. Their presence, as well as their respective speaking slot can have effects on both the amount and quality of information exchanged and can equally foster conformity behavior and opinion alignments. Also, a more thorough observation of the interaction of time pressure and sequential speaking turns might contribute greatly to the further understanding of group decision-making processes.

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### *Experimental Procedure – Treatment A: “random repeated”*

#### **Task description:**

You are presented with a hiring decision.

Two candidates applied for a job vacancy at your firm. Your boss asked you and three of your colleagues to discuss all candidates as a group and select ONE candidate to invite for a job interview. Candidates are ultimately elected by vote.

Before a group discussion starts, you will get a chance to look at each candidate's qualifications individually and decide for yourself which person is most suitable for the job. After that, you will meet with your colleagues to discuss the candidates.

If the candidate you selected before the group discussion is also the one presented to your boss by the group after the group discussion, you can take credit and improve your standing within the firm. However, you are also allowed to change your mind about candidates during the course of the discussion.

Keep in mind that your boss wants to fill the vacant position very urgently and that he needs a final decision from your group as soon as possible.

Before we start please indicate your gender:

- ☐ male
- ☐ female

#### **Candidate descriptions: Agent A & Agent C**

You have to select a candidate for the position of SENIOR HUMAN RESOURCE MANAGER

You would prefer an applicant...

- ... with a university degree in business administration
- ... with a minimum of ten years of working experience

Please find the candidate descriptions available to you below:

##### *Candidate 1*

- ... has a university degree in business administration
- ... has eleven years of working experience
- ... held a leadership position at the old firm
- ... regularly attends training seminars
- ... seems to have great people-skills

##### *Candidate 2*

- ... has five years of working experience
- ... has an unexplained three year gap in CV
- ... demands additional benefits, such as a company car or work cell
- ... is said to have an authoritarian leadership style
- ... needs a minimum of one day per week as home office

Which candidate do you personally prefer at this point in time?

- ☐ Candidate 1
- ☐ Candidate 2

## Candidate descriptions: Agent B & Agent D

You have to select a candidate for the position of SENIOR HUMAN RESOURCE MANAGER

You would prefer an applicant...

- ... with a great reputation at the old firm
- ... with international working experience

Please find the candidate descriptions available to you below:

### *Candidate 1*

- ... got fired from his/her old job for unknown reasons
- ... has salary expectations over budget
- ... would be unable to relocate for work
- ... demands an additional week of holidays per year
- ... seemed uninterested in the job when first talking on the phone

### *Candidate 2*

- ... has prior working experience in London and Chicago
- ... has an excellent recommendation from his/her old firm
- ... brings extensive SAP skills important for the position
- ... speaks four languages fluently, all relevant to the firm
- ... seemed enthusiastic about the job when first talking on the phone

Which candidate do you personally prefer at this point in time?

- ☐ Candidate 1
- ☐ Candidate 2

## Introduction before the group discussion:

Let's start with the group discussion. You will be meeting with three of your colleagues in a conference room shortly to discuss which of the two candidates you as a group want to present to your boss.

When it is your turn to talk, you HAVE to share your candidate preference with your colleagues, but you CAN choose to share ONE candidate-specific information with your discussion group.

After one round of discussing, you are allowed to stop the discussion and suggest a candidate voting to choose a candidate for presentation. Only if all members of your group want to vote for a candidate, the candidate voting will actually take place, otherwise, the group discussion will go on. Candidate votings will be anonymous, so the ultimate outcome will not be published.

There will be a total of five discussion rounds, which means you have the chance to voice your opinion six times. If nobody suggested a candidate voting until then, you will enter the voting stage automatically.

Please keep in mind that the group discussion is there to collect as much information about the two candidates as possible, however, do not feel pressured to share information if you do not want to.

## Summary & choice between candidate voting and group discussion after round 1-4:

The first/second/third/fourth round is over. You have the chance to propose an anonymous candidate voting or proceed with the group discussion to share and collect more information.

Find all current candidate preferences below:

- current preference of agent A
- current preference of agent B
- current preference of agent C
- current preference of agent D

- All information shared by the group members were displayed on the right -

What should happen next? ☐ Candidate voting  
☐ Group discussion



**Summary & choice between candidate voting and group discussion after round 5:**

The fifth round is over. You have the chance to propose an anonymous candidate voting or proceed with the group discussion to share and collect more information.

Find all current candidate preferences below:

- current preference of agent A
- current preference of agent B
- current preference of agent C
- current preference of agent D

*- All information shared by the group members were displayed on the right -*

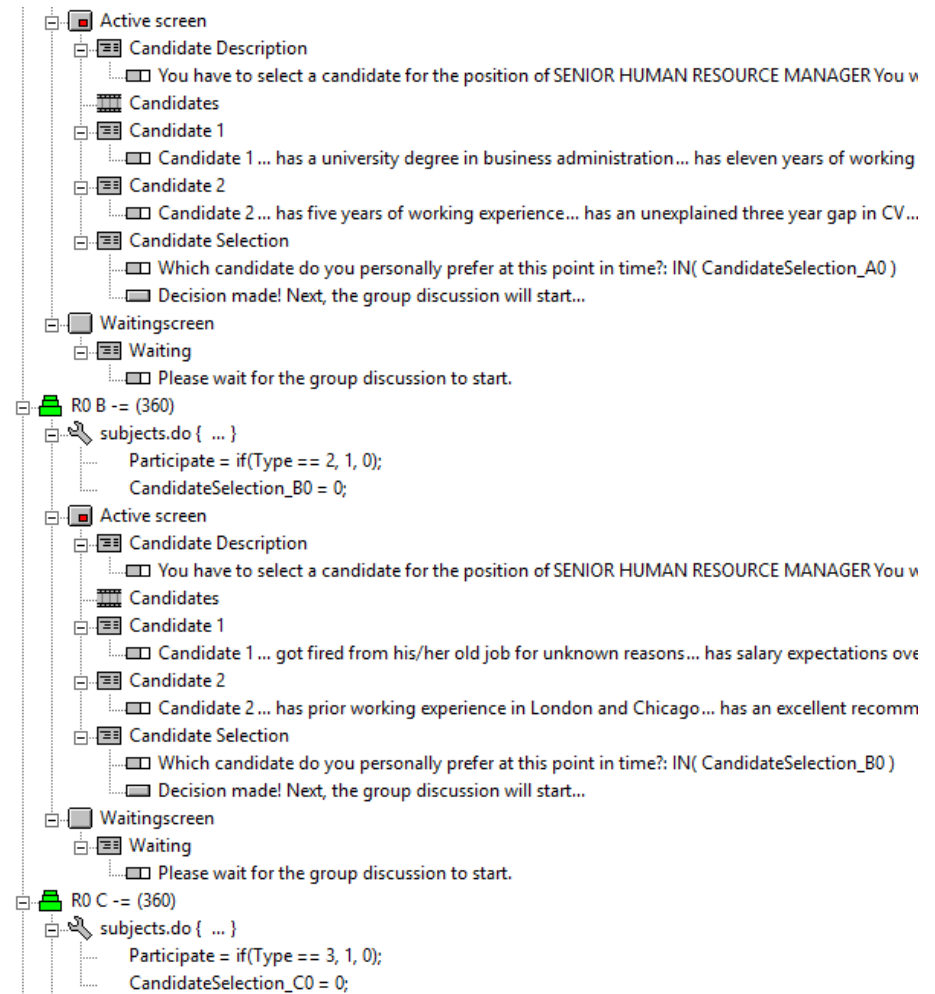
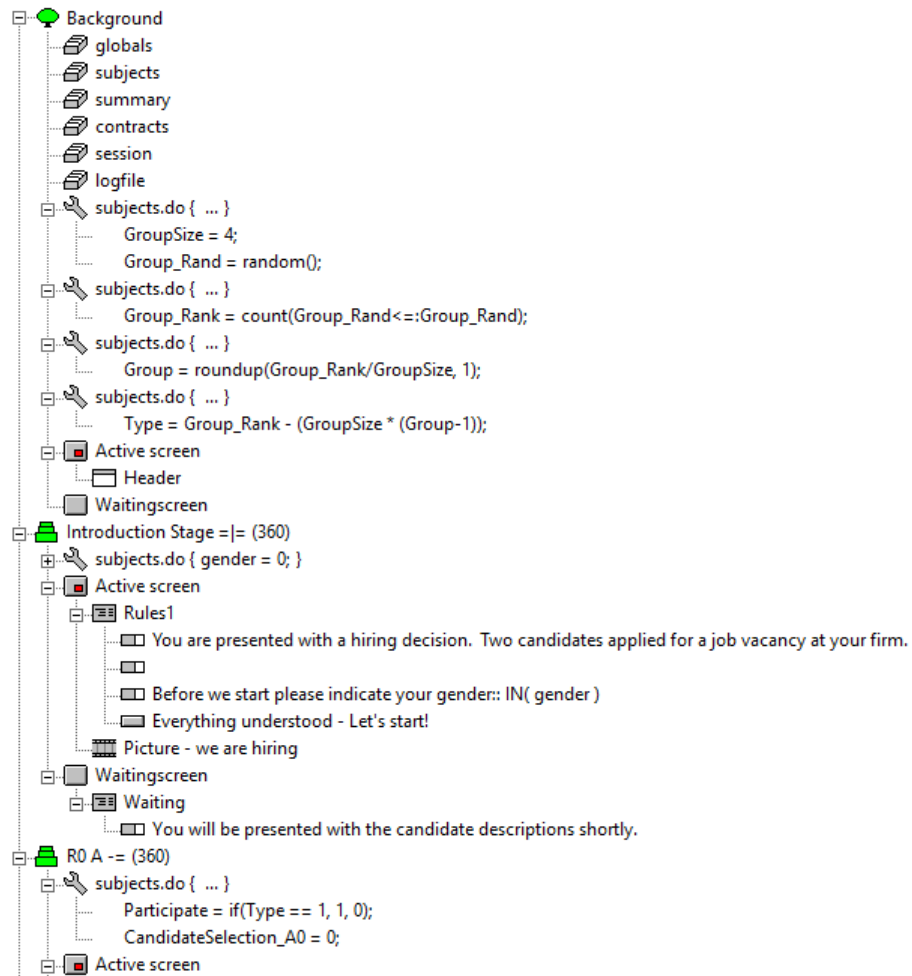
The group discussion is now over and the candidate voting will take place.

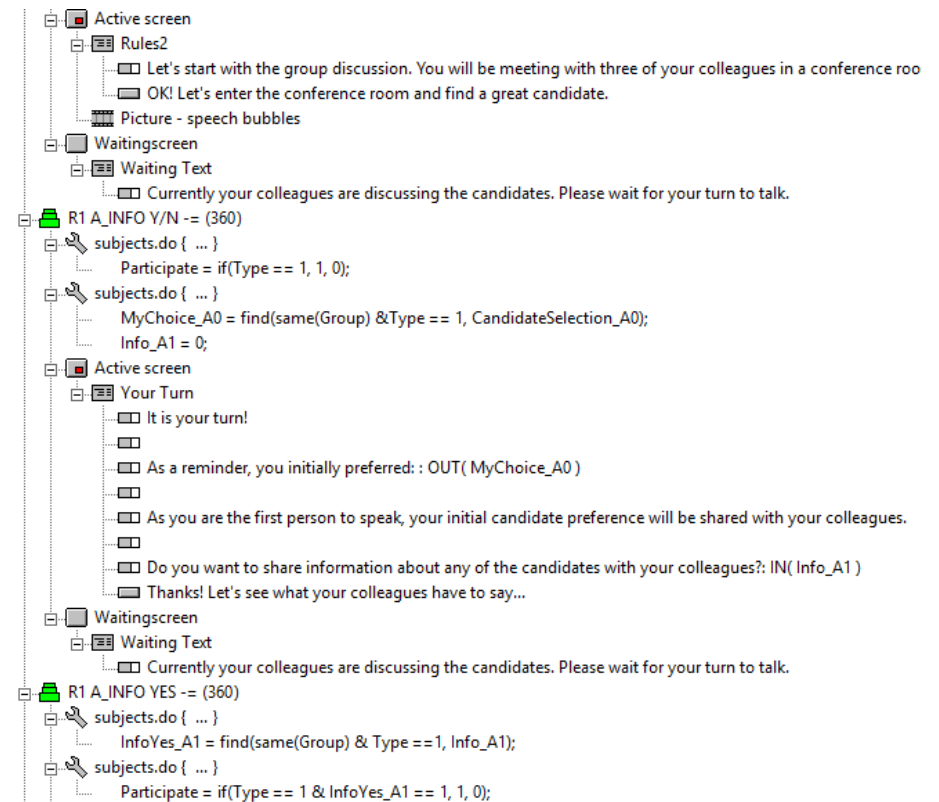
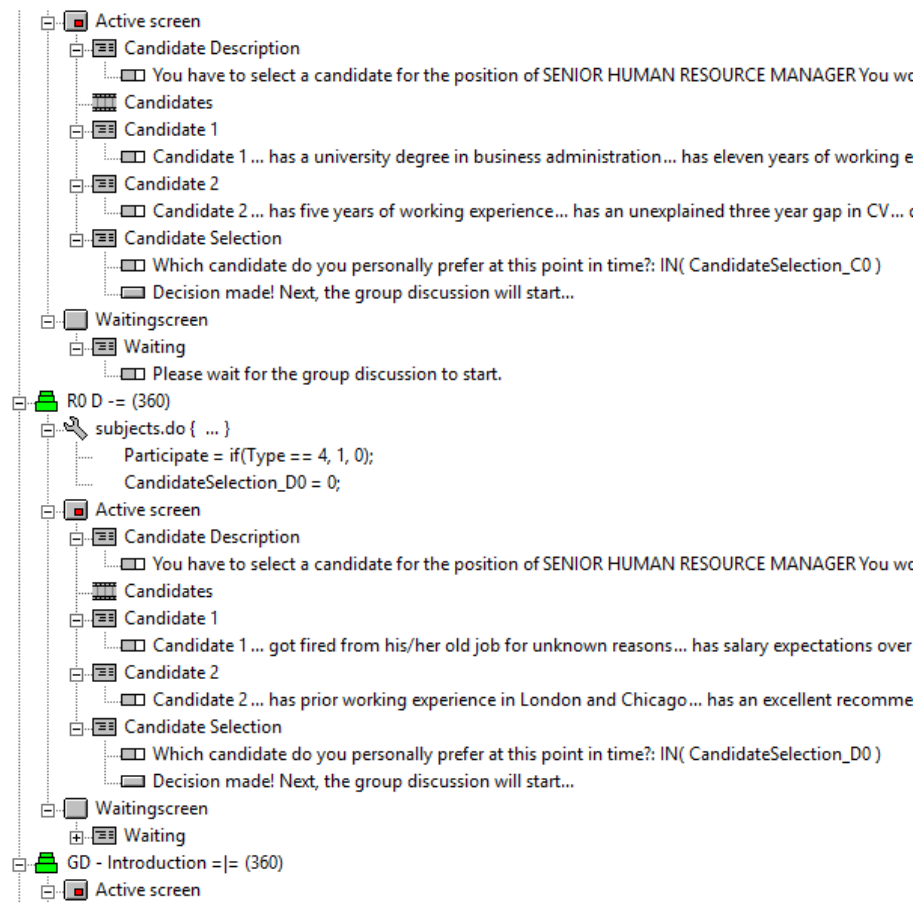
**Final candidate voting:**

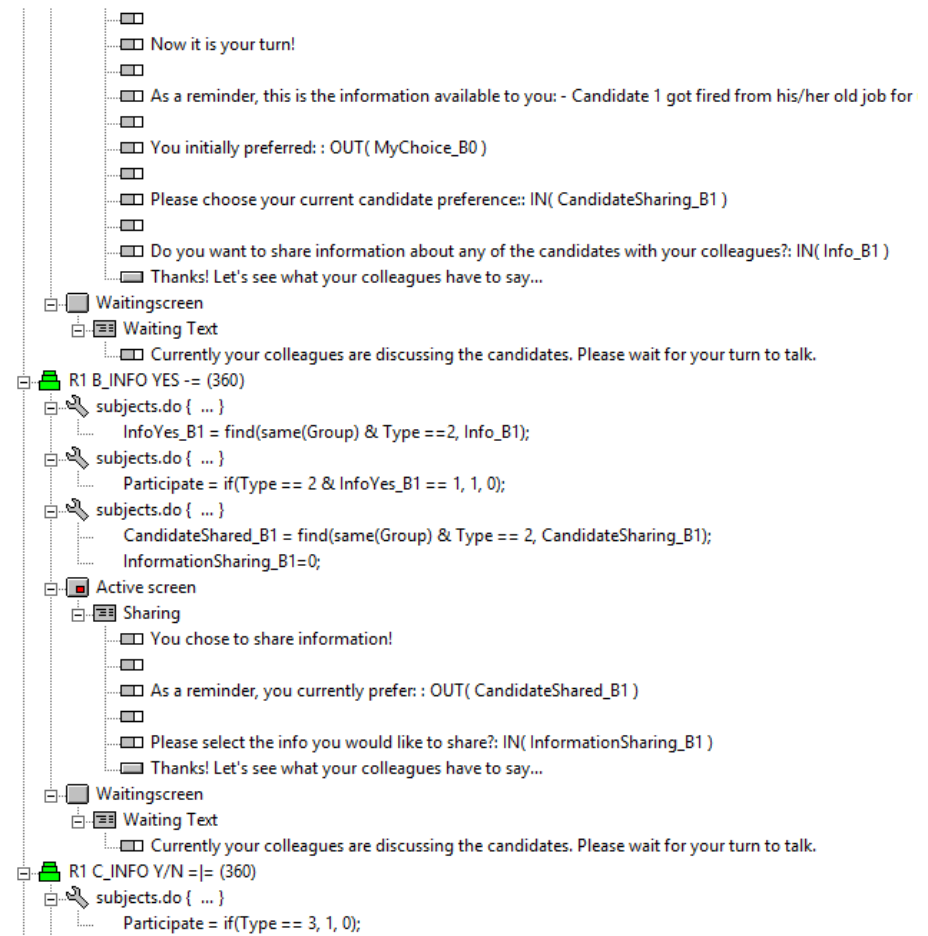
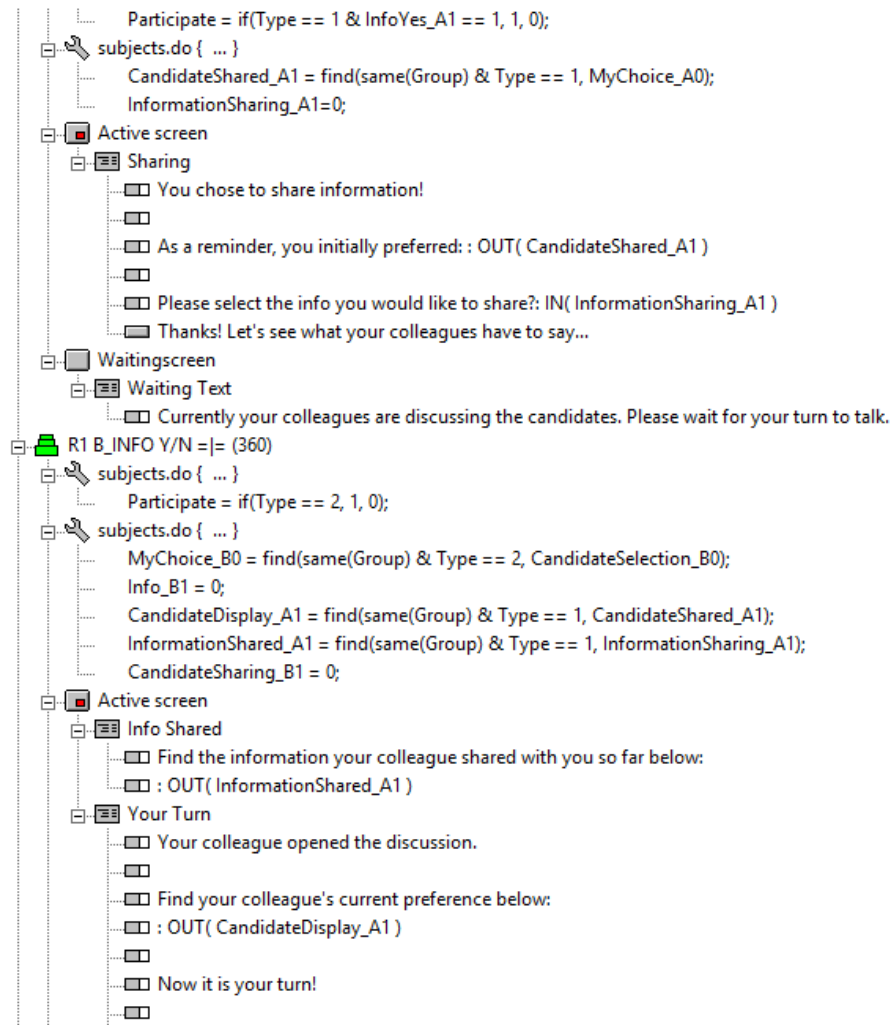
The anonymous voting starts now!

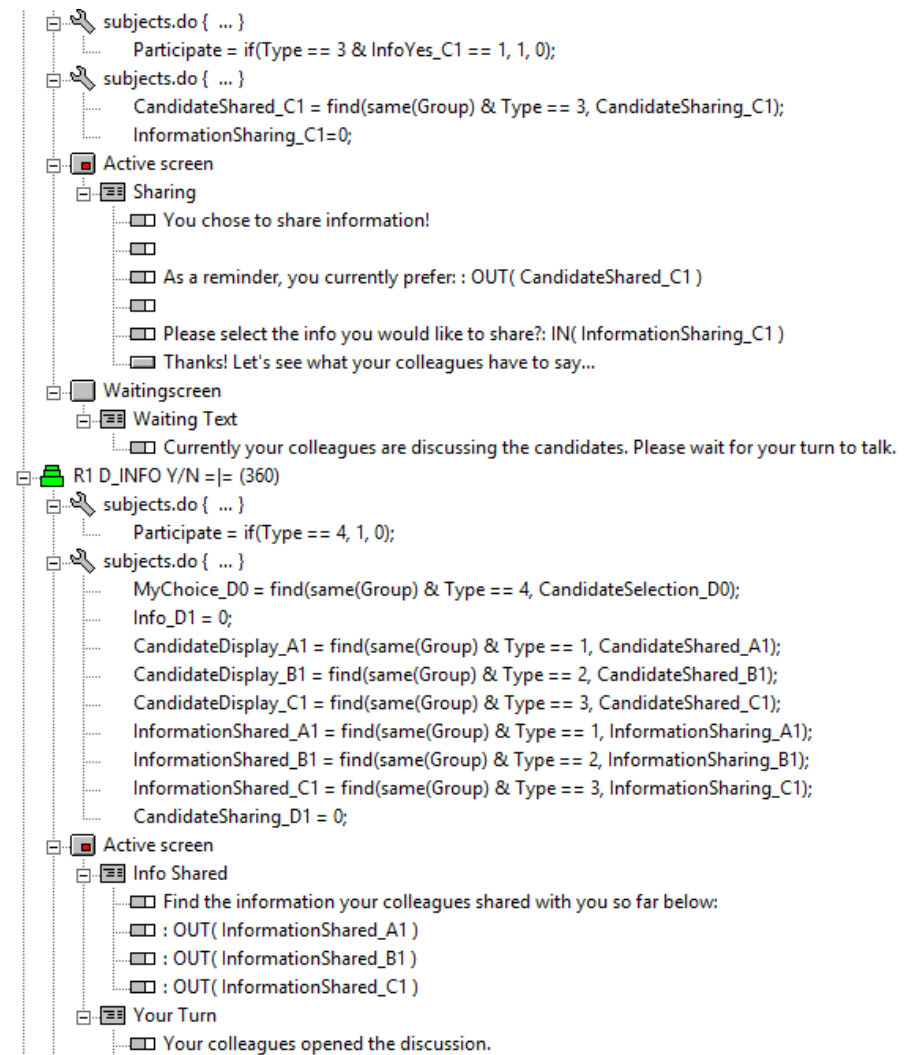
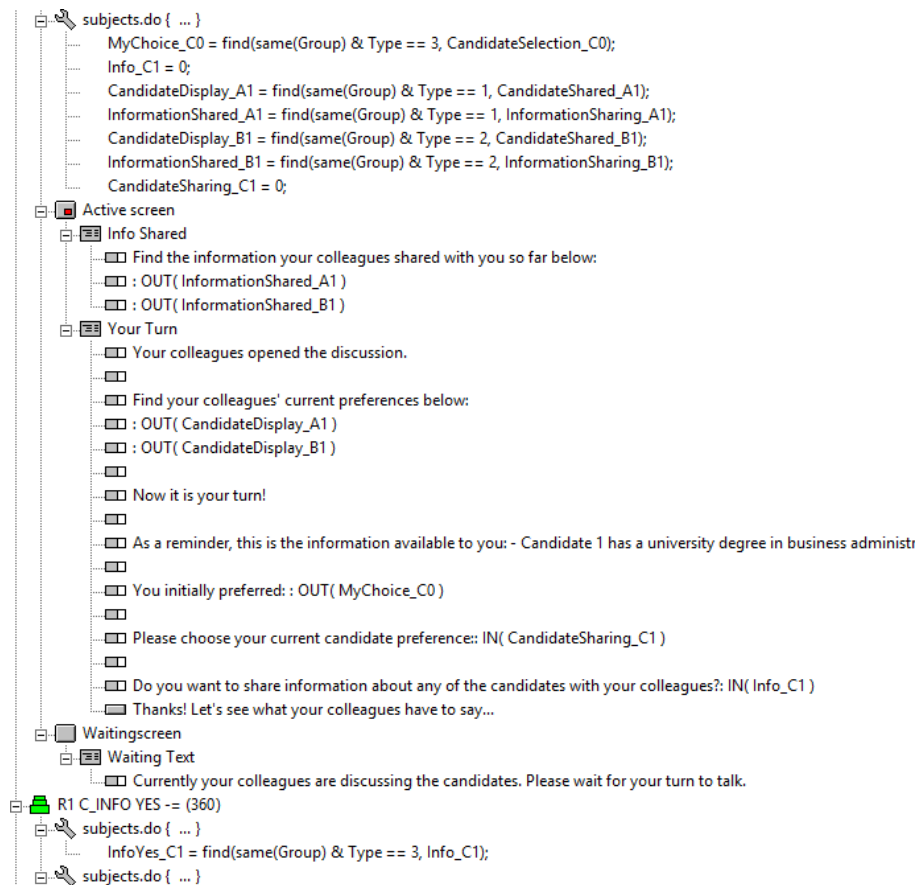
Please submit your candidate voting: o Candidate 1  
o Candidate 2

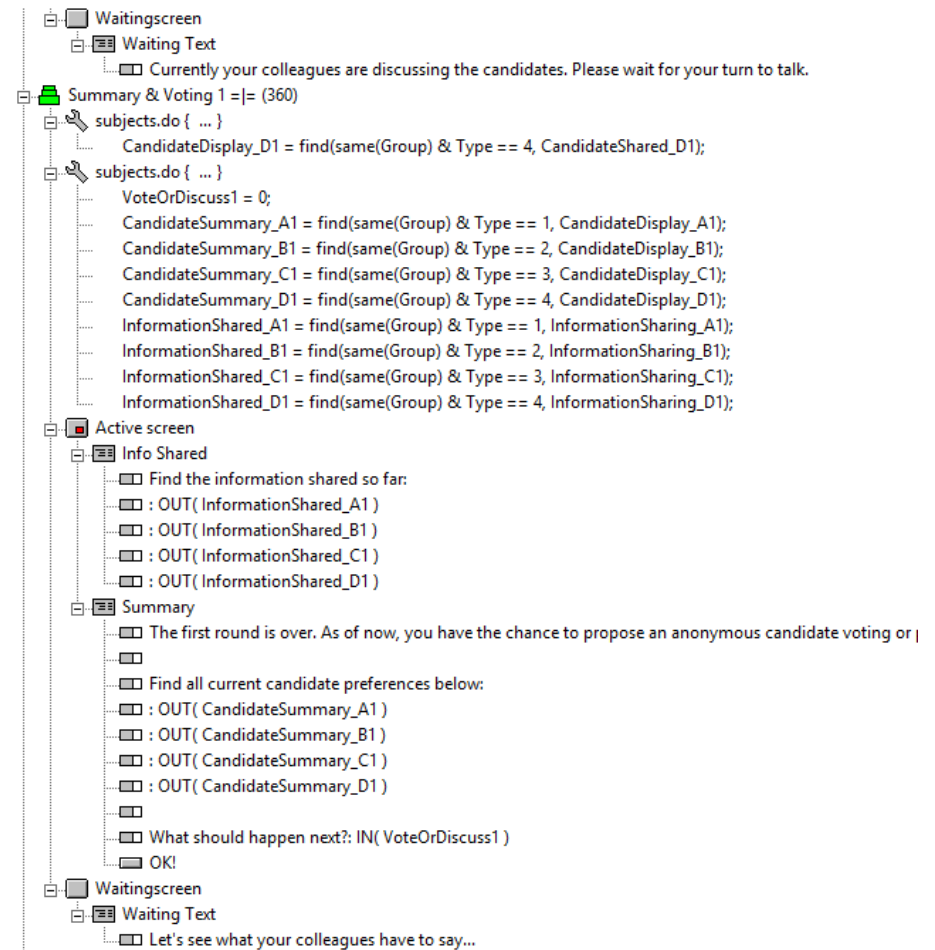
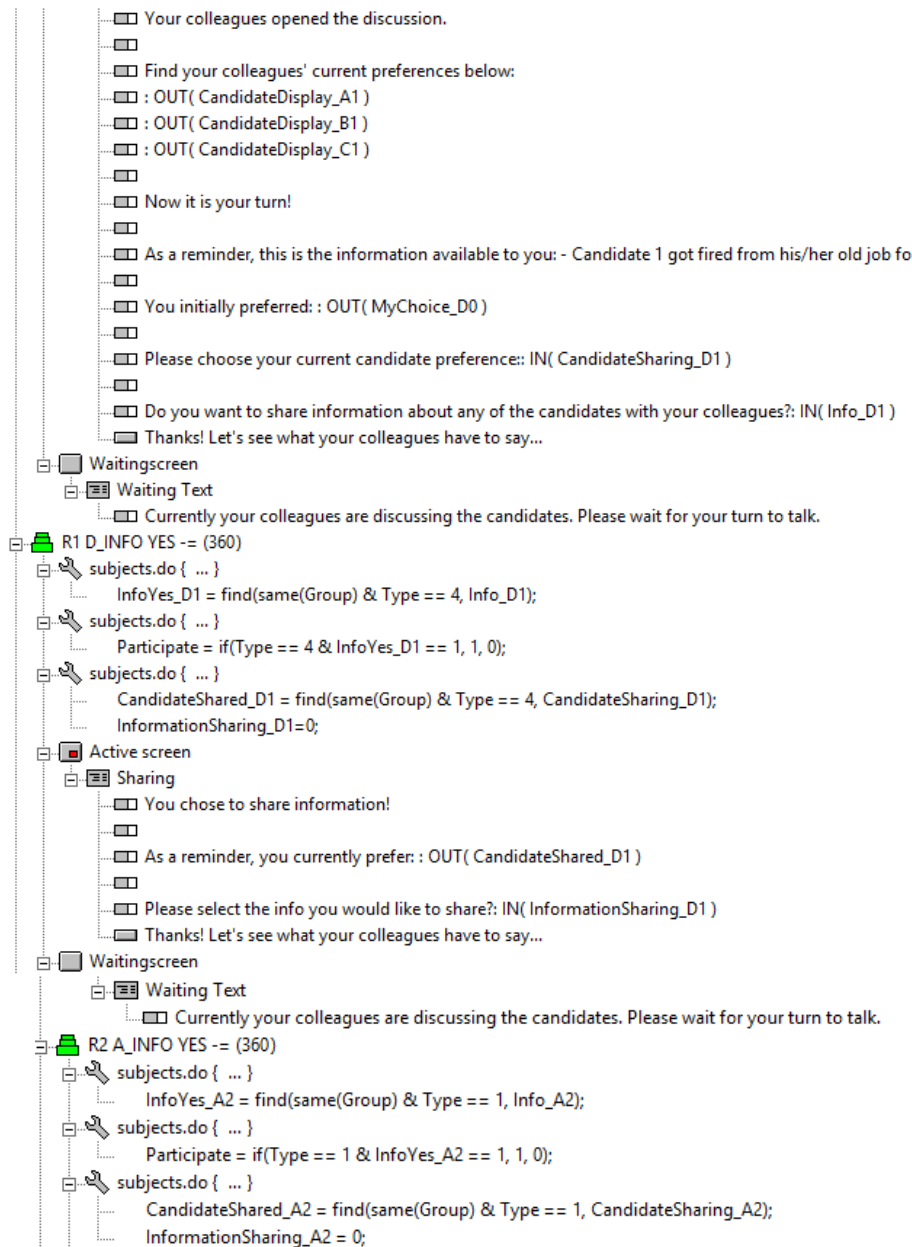
## z-Tree code:

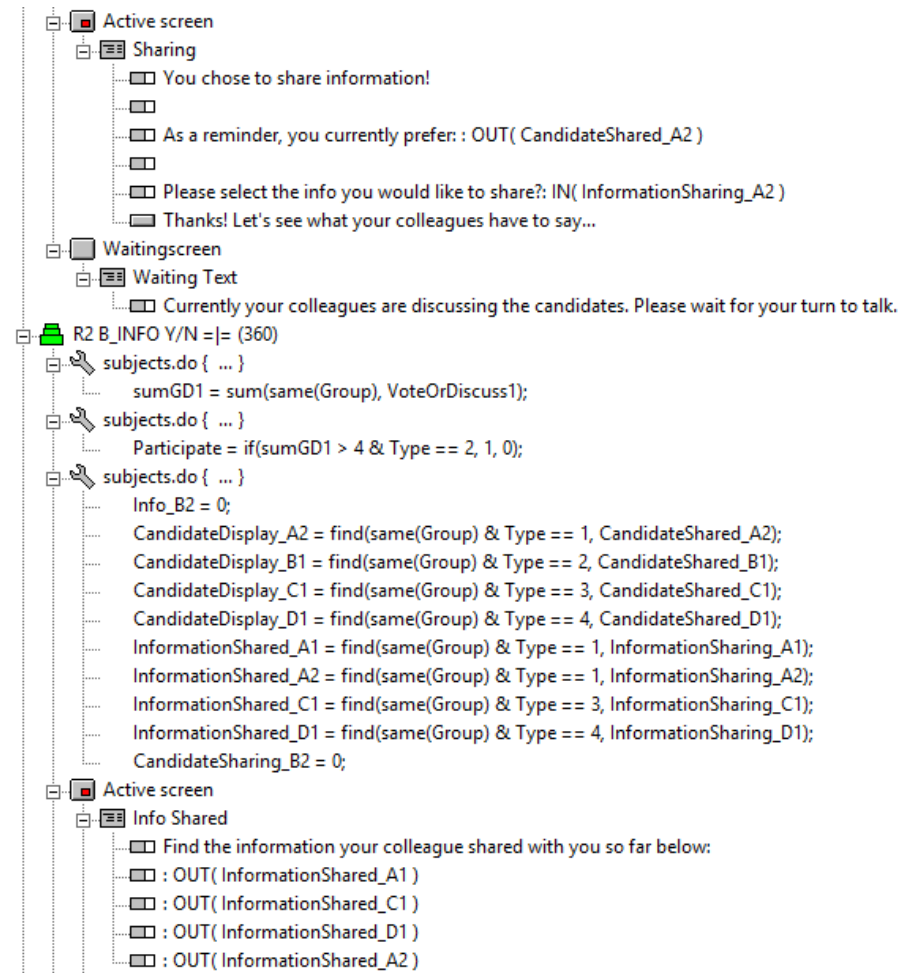
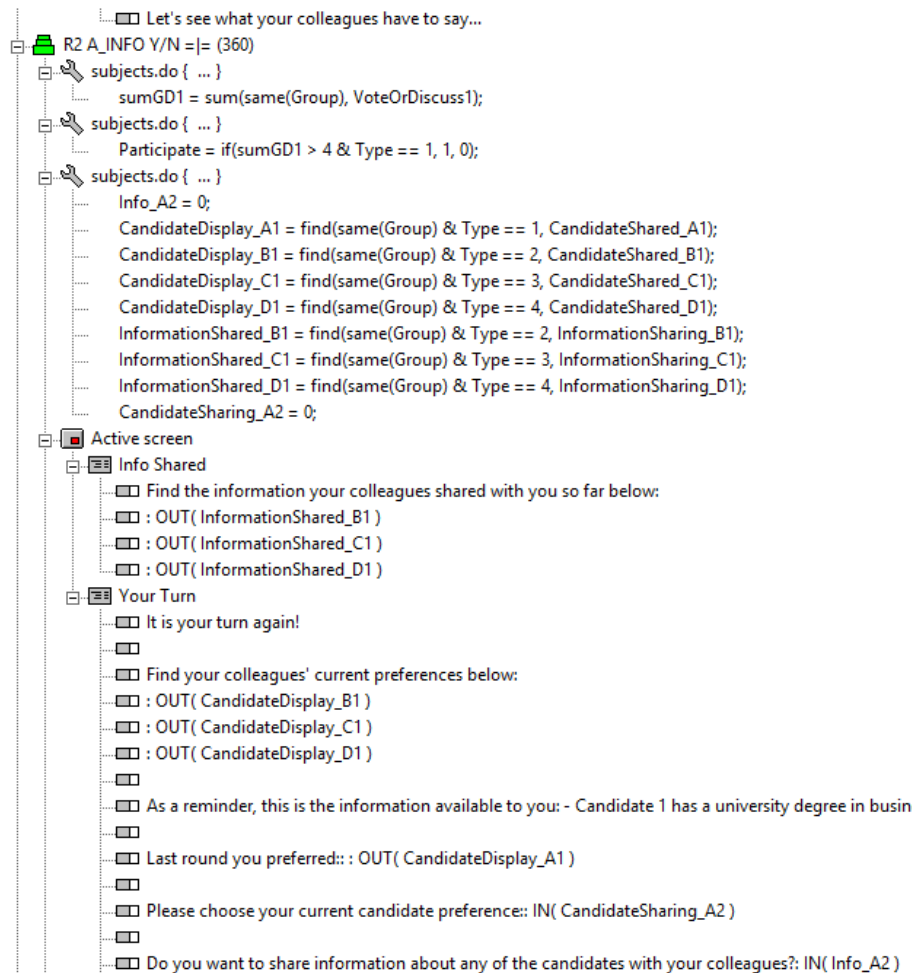




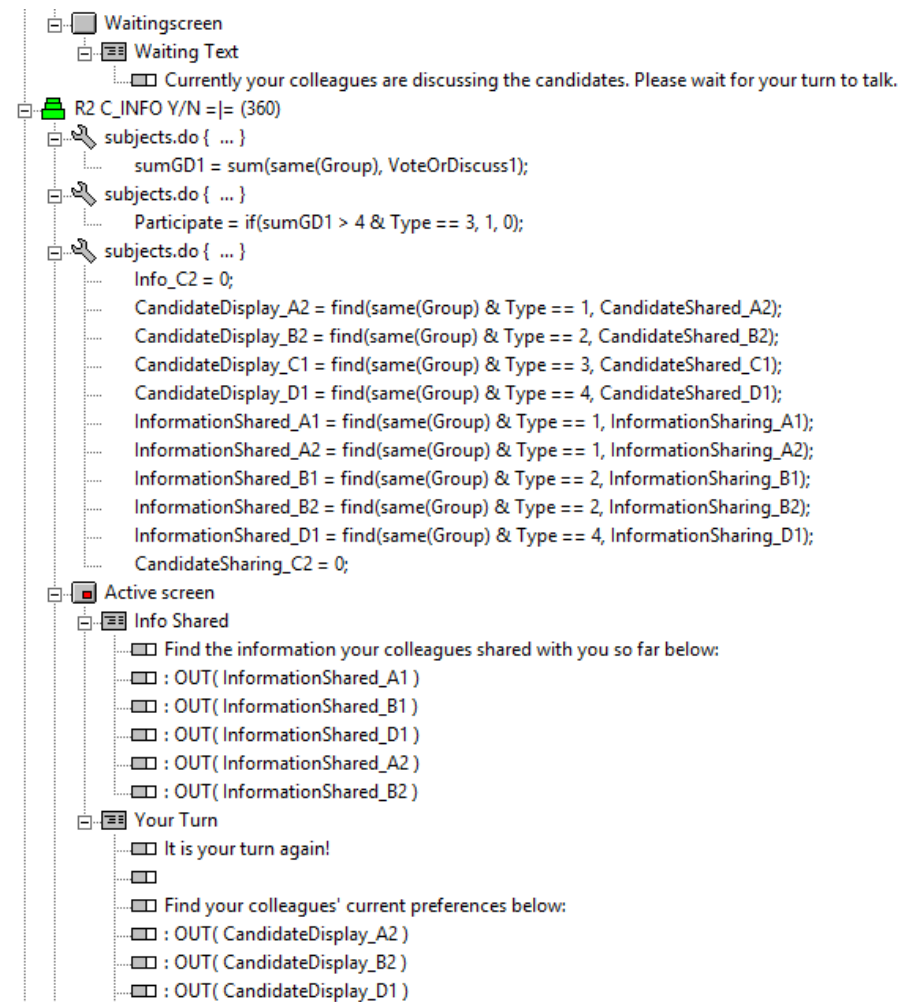
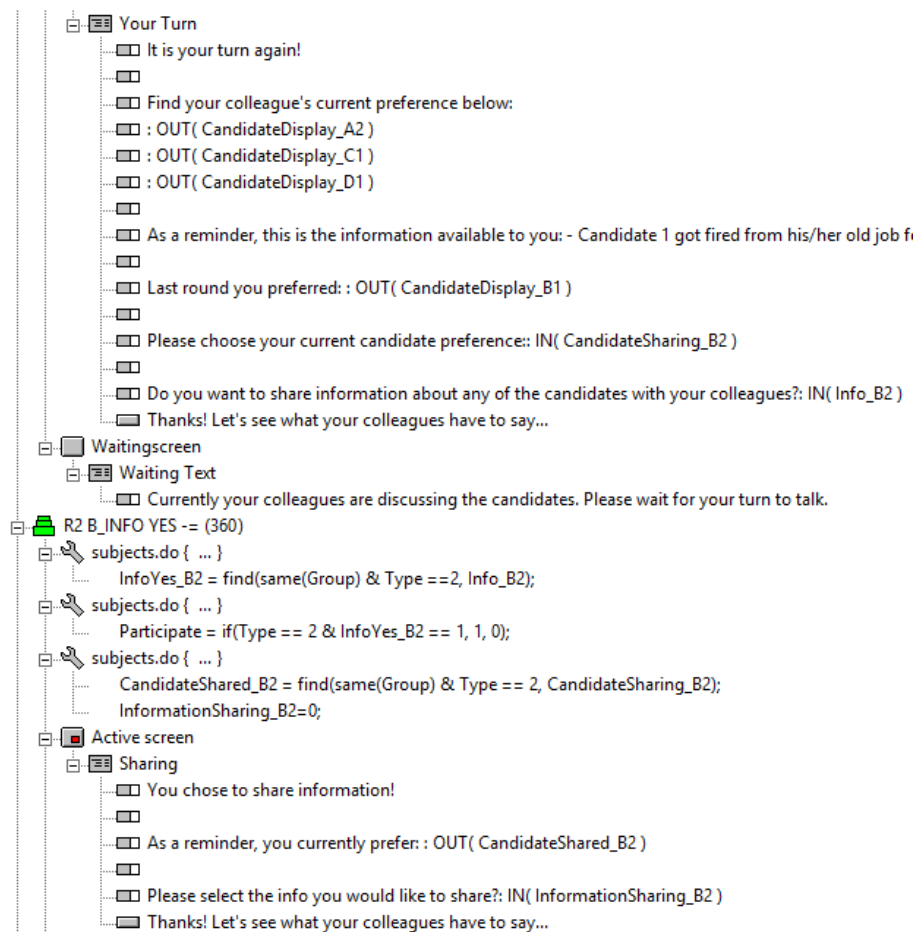




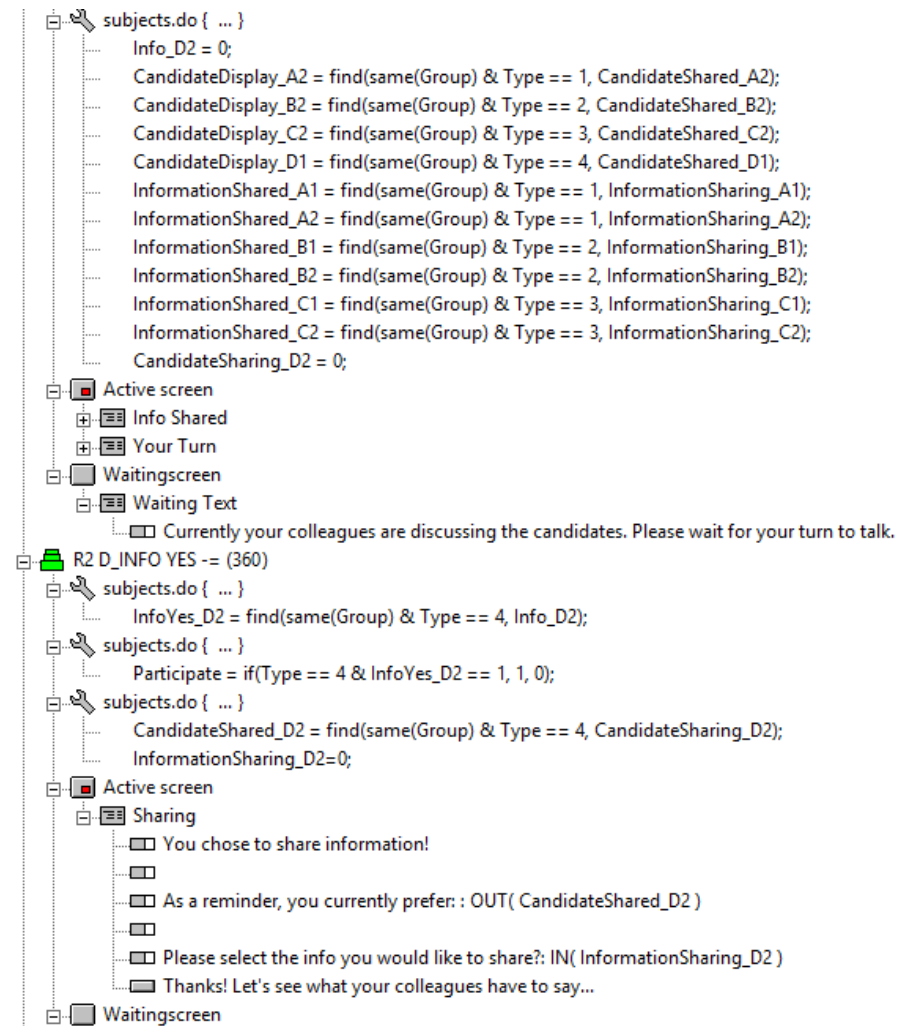
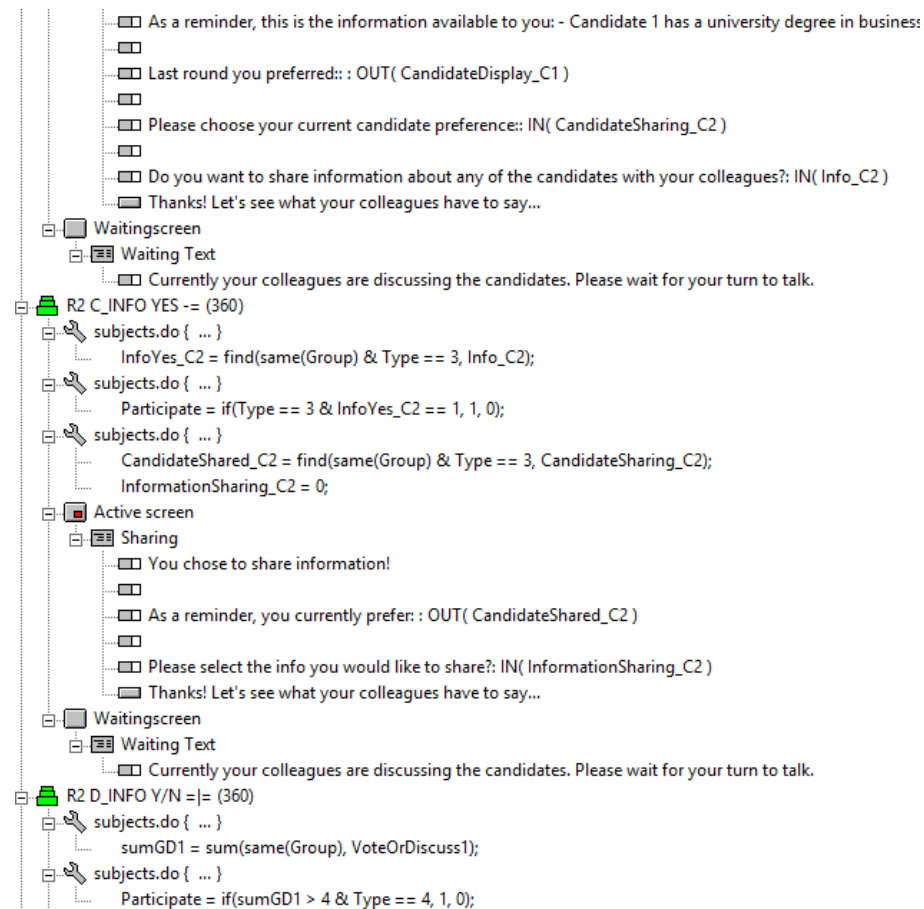


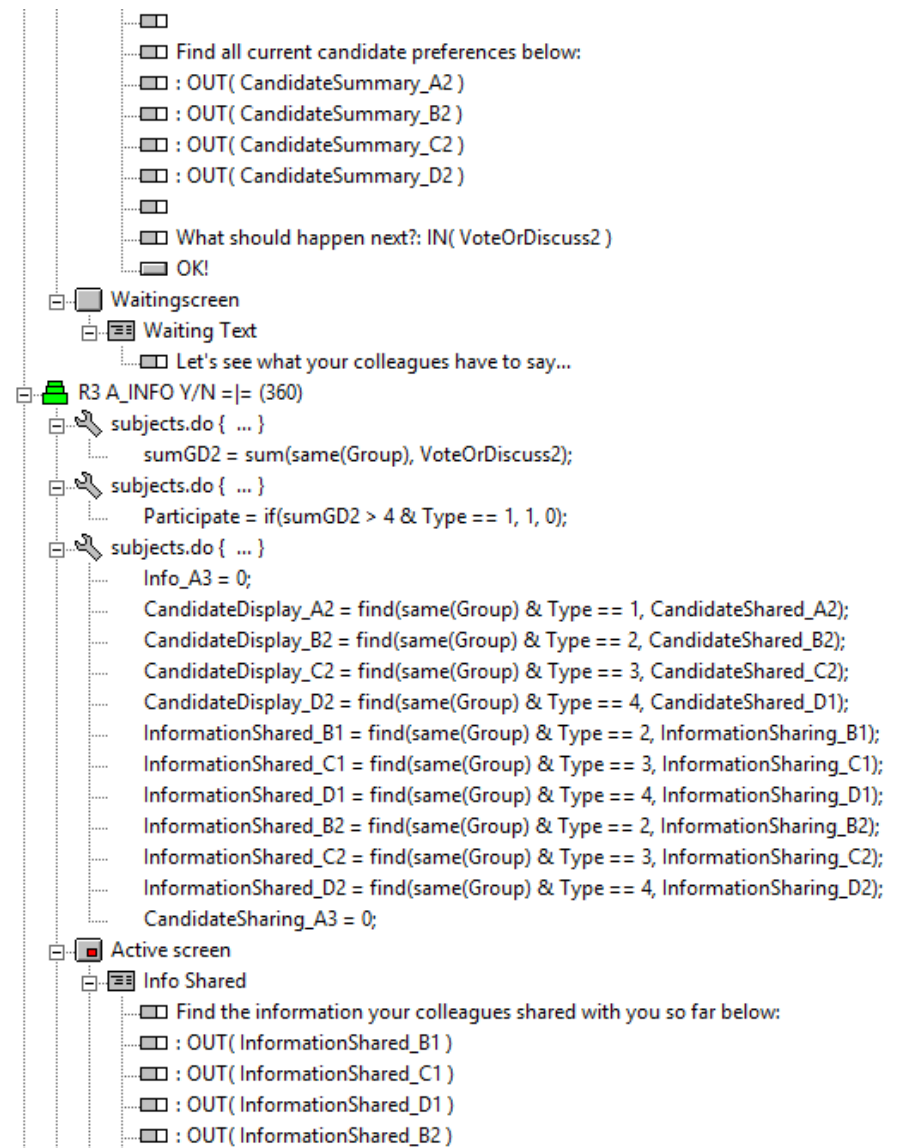
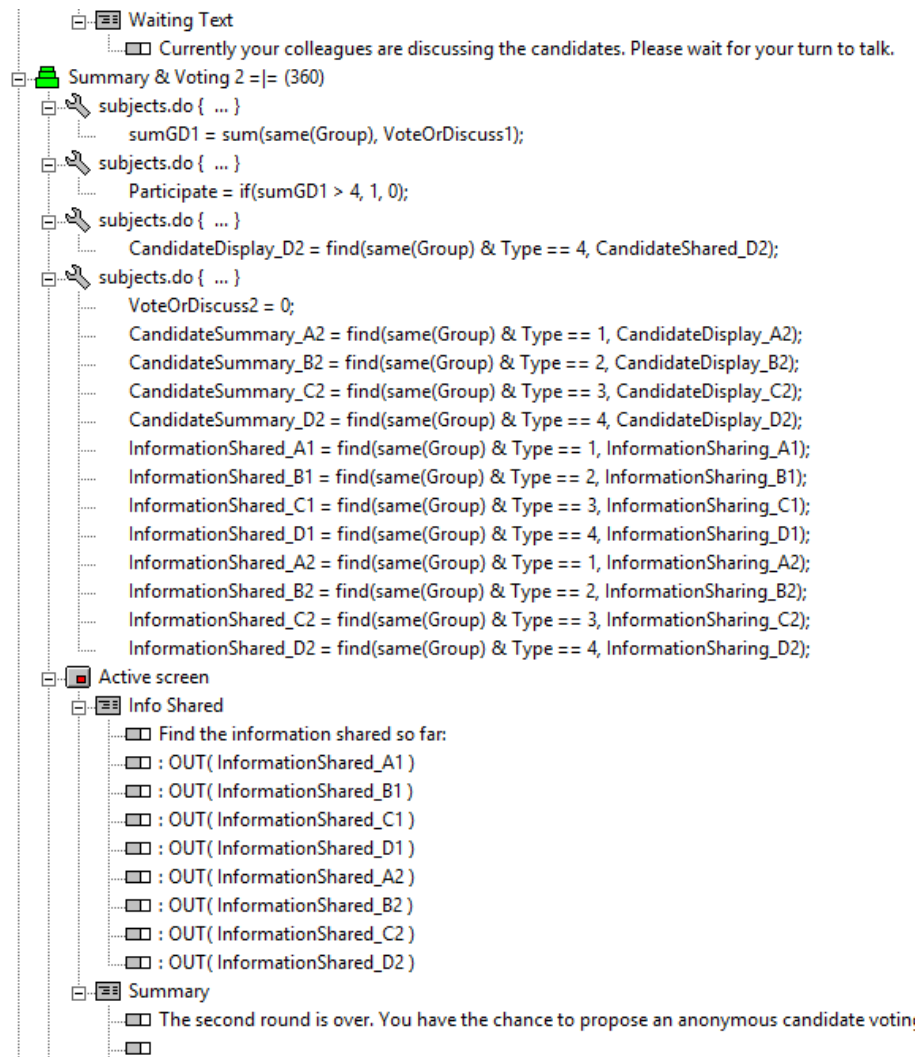


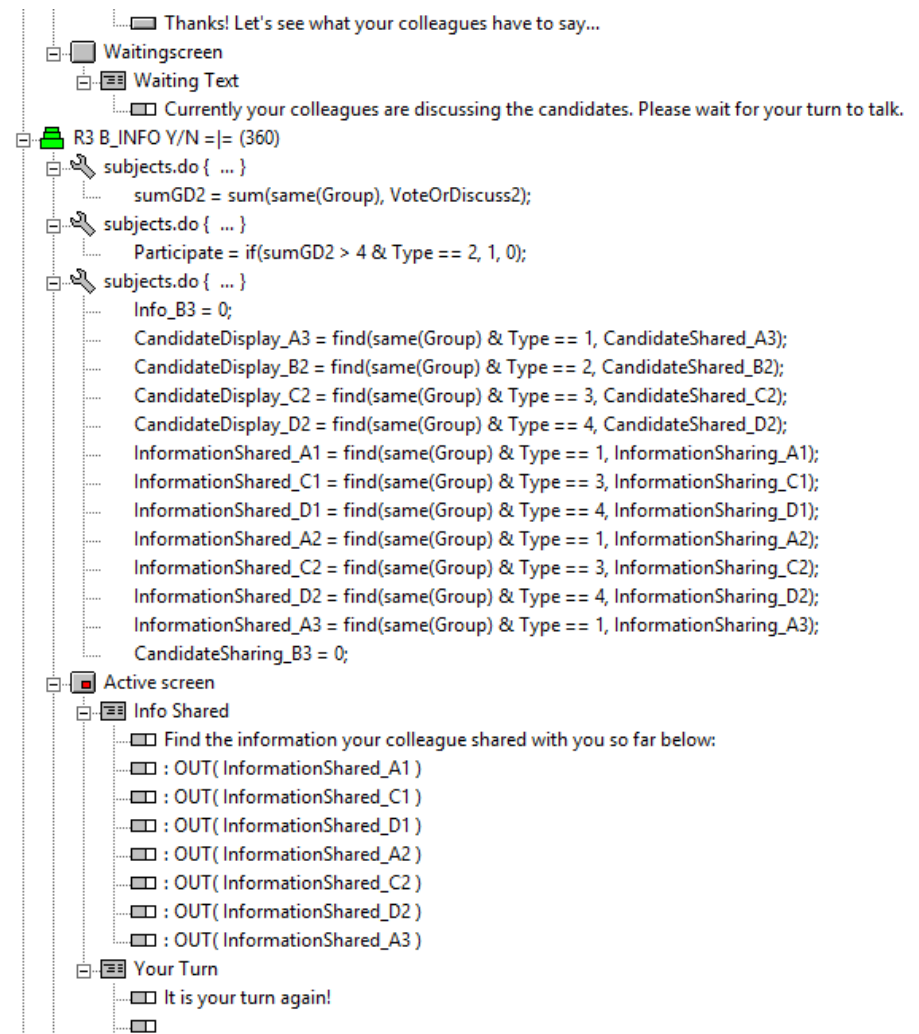
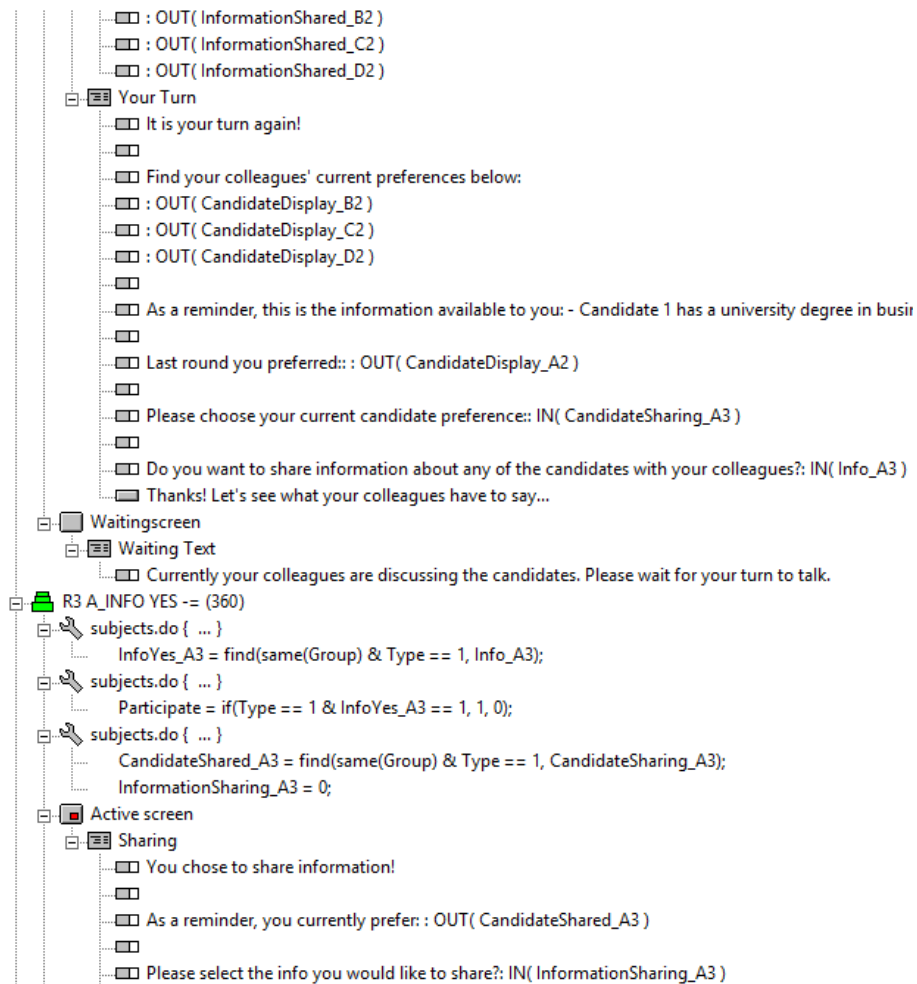


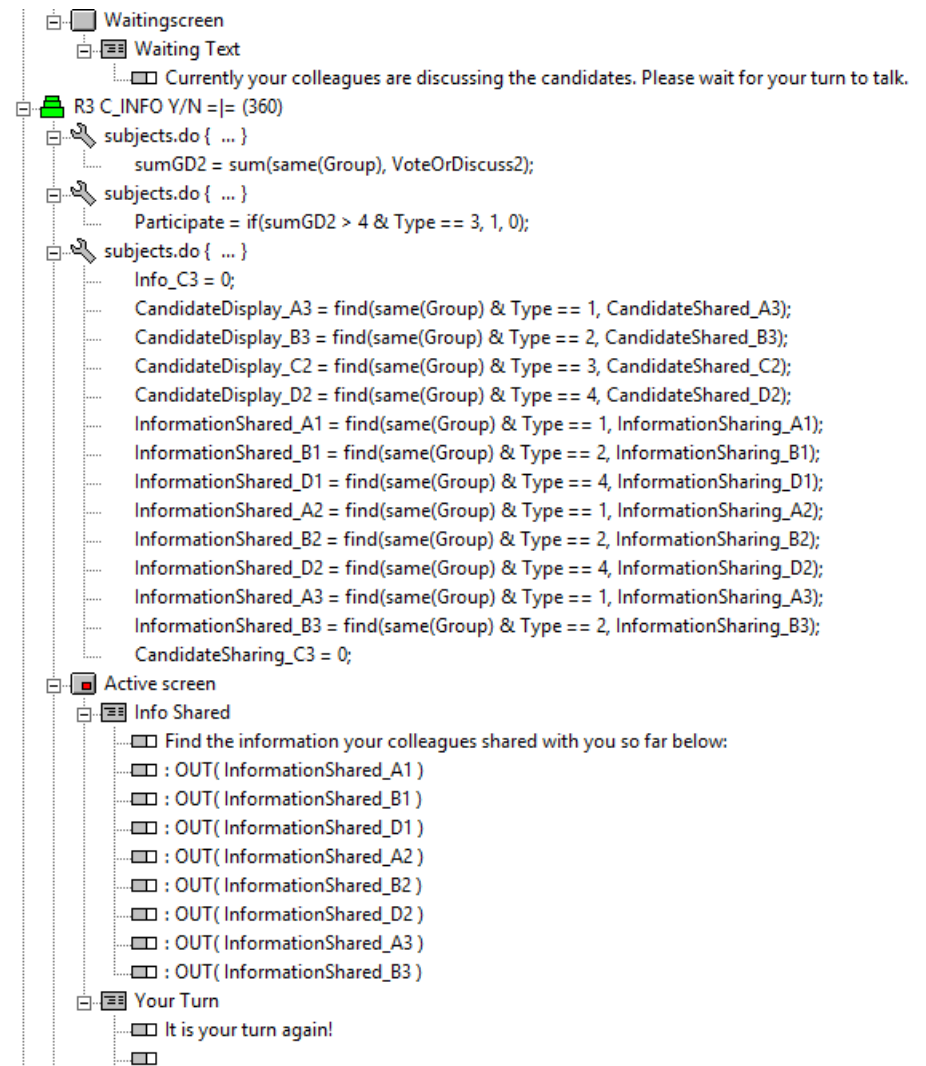
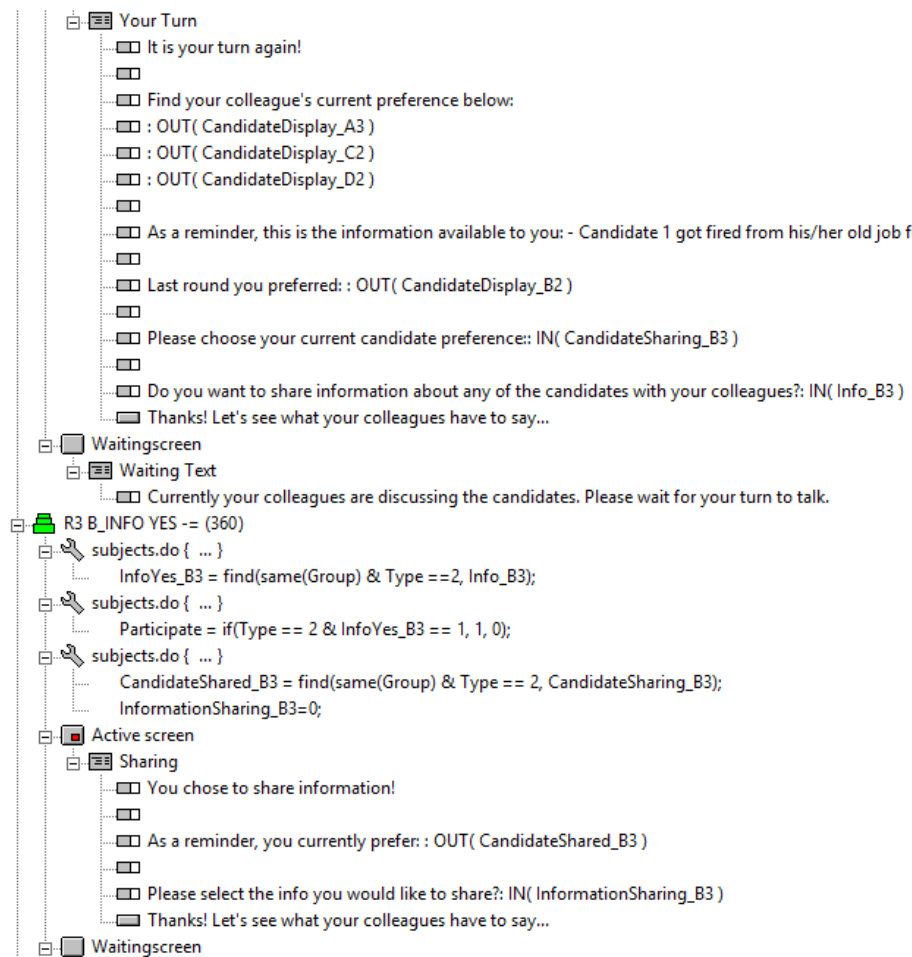


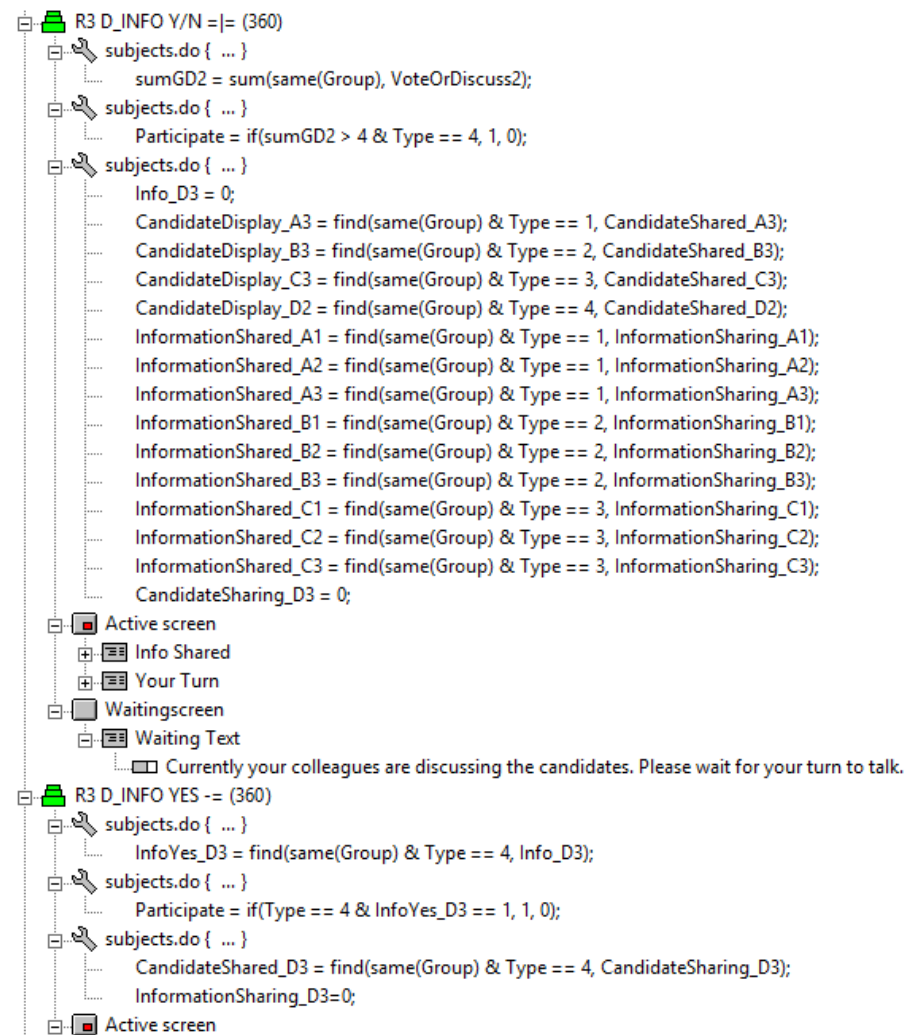
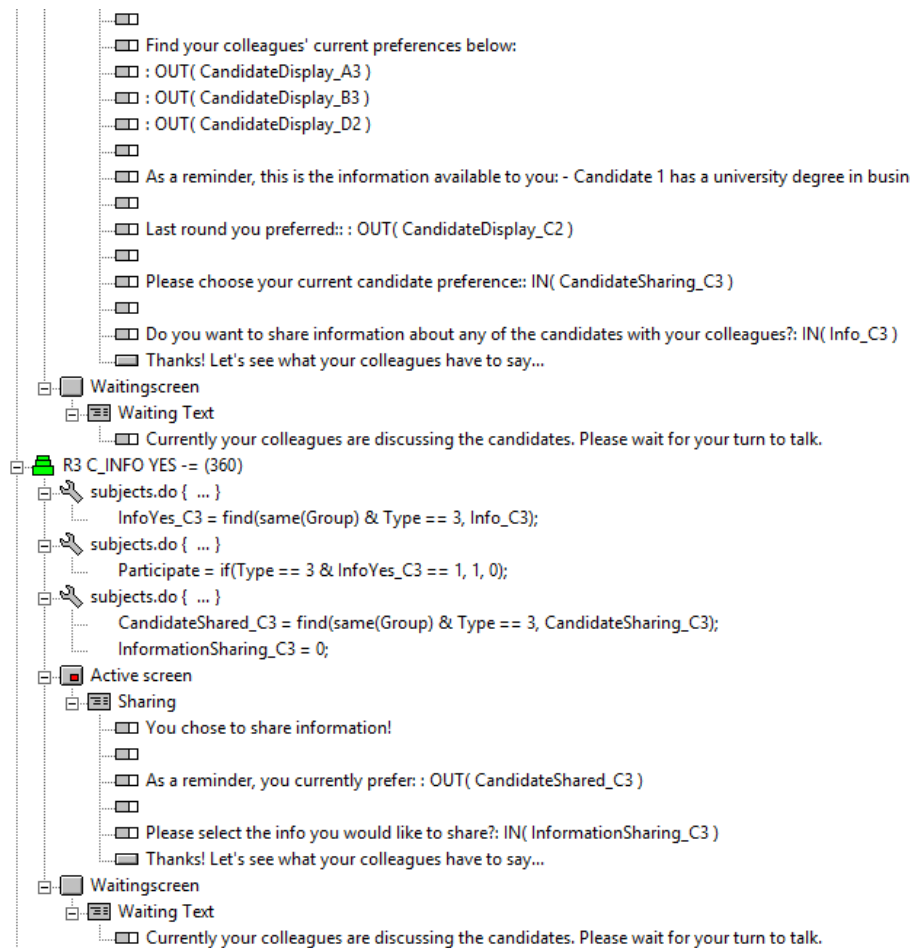




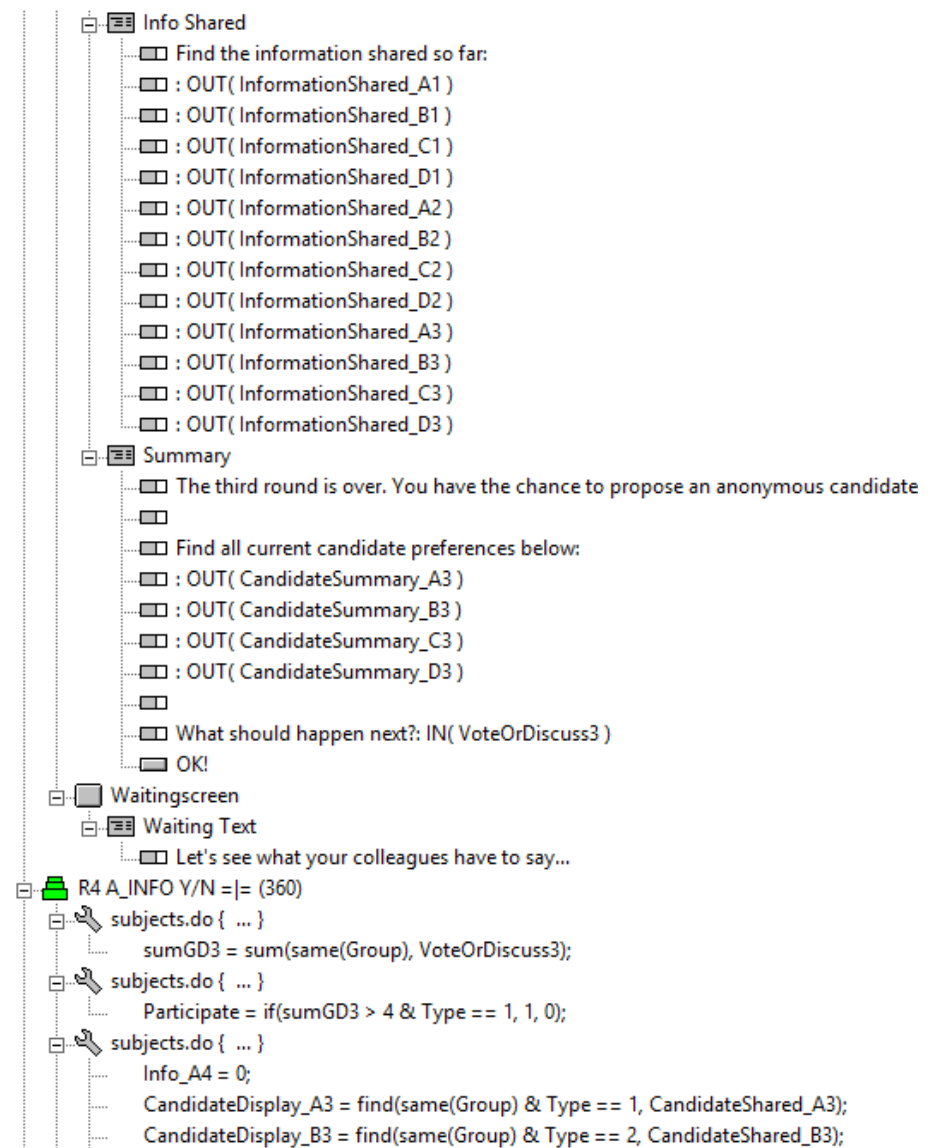
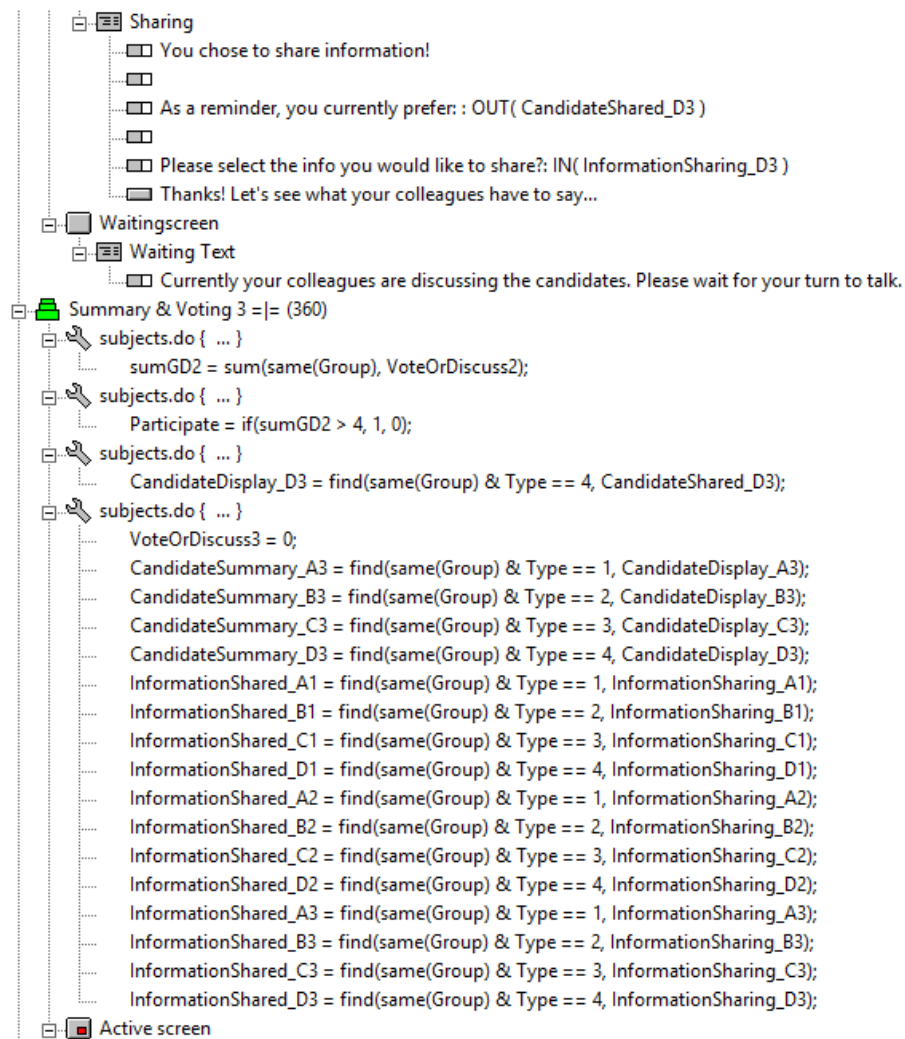












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CandidateDisplay_B3 = find(same(Group) & Type == 2, CandidateShared_B3);
CandidateDisplay_C3 = find(same(Group) & Type == 3, CandidateShared_C3);
CandidateDisplay_D3 = find(same(Group) & Type == 4, CandidateShared_D3);
InformationShared_B1 = find(same(Group) & Type == 2, InformationSharing_B1);
InformationShared_C1 = find(same(Group) & Type == 3, InformationSharing_C1);
InformationShared_D1 = find(same(Group) & Type == 4, InformationSharing_D1);
InformationShared_B2 = find(same(Group) & Type == 2, InformationSharing_B2);
InformationShared_C2 = find(same(Group) & Type == 3, InformationSharing_C2);
InformationShared_D2 = find(same(Group) & Type == 4, InformationSharing_D2);
InformationShared_B3 = find(same(Group) & Type == 2, InformationSharing_B3);
InformationShared_C3 = find(same(Group) & Type == 3, InformationSharing_C3);
InformationShared_D3 = find(same(Group) & Type == 4, InformationSharing_D3);
CandidateSharing_A4 = 0;

Active screen
  Info Shared
    Find the information your colleagues shared with you so far below:
    OUT( InformationShared_B1 )
    OUT( InformationShared_C1 )
    OUT( InformationShared_D1 )
    OUT( InformationShared_B2 )
    OUT( InformationShared_C2 )
    OUT( InformationShared_D2 )
    OUT( InformationShared_B3 )
    OUT( InformationShared_C3 )
    OUT( InformationShared_D3 )
  Your Turn
    It is your turn again!
    Find your colleagues' current preferences below:
    OUT( CandidateDisplay_B3 )
    OUT( CandidateDisplay_C3 )
    OUT( CandidateDisplay_D3 )
    As a reminder, this is the information available to you: - Candidate 1 has a university degree in
    Last round you preferred: : OUT( CandidateDisplay_A3 )

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Please choose your current candidate preference:: IN( CandidateSharing_A4 )
Do you want to share information about any of the candidates with your colleagues?: IN( Info_A4 )
Thanks! Let's see what your colleagues have to say...

Waitingscreen
  Waiting Text
    Currently your colleagues are discussing the candidates. Please wait for your turn to talk.

R4 A_INFO YES -> (360)
  subjects.do { ... }
    InfoYes_A4 = find(same(Group) & Type == 1, Info_A4);
  subjects.do { ... }
    Participate = if(Type == 1 & InfoYes_A4 == 1, 1, 0);
  subjects.do { ... }
    CandidateShared_A4 = find(same(Group) & Type == 1, CandidateSharing_A4);
    InformationSharing_A4 = 0;

Active screen
  Sharing
    You chose to share information!
    As a reminder, you currently prefer: : OUT( CandidateShared_A4 )
    Please select the info you would like to share?: IN( InformationSharing_A4 )
    Thanks! Let's see what your colleagues have to say...

Waitingscreen
  Waiting Text
    Currently your colleagues are discussing the candidates. Please wait for your turn to talk.

R4 B_INFO Y/N => (360)
  subjects.do { ... }
    sumGD3 = sum(same(Group), VoteOrDiscuss3);
  subjects.do { ... }
    Participate = if(sumGD3 > 4 & Type == 2, 1, 0);
  subjects.do { ... }
    Info_B4 = 0;
    CandidateDisplay_A4 = find(same(Group) & Type == 1, CandidateShared_A3);
    CandidateDisplay_B3 = find(same(Group) & Type == 2, CandidateShared_B3);
    CandidateDisplay_C3 = find(same(Group) & Type == 3, CandidateShared_C3);

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CandidateDisplay_C3 = find(same(Group) & Type == 3, CandidateShared_C3);
CandidateDisplay_D3 = find(same(Group) & Type == 4, CandidateShared_D3);
InformationShared_A1 = find(same(Group) & Type == 1, InformationSharing_A1);
InformationShared_C1 = find(same(Group) & Type == 3, InformationSharing_C1);
InformationShared_D1 = find(same(Group) & Type == 4, InformationSharing_D1);
InformationShared_A2 = find(same(Group) & Type == 1, InformationSharing_A2);
InformationShared_C2 = find(same(Group) & Type == 3, InformationSharing_C2);
InformationShared_D2 = find(same(Group) & Type == 4, InformationSharing_D2);
InformationShared_A3 = find(same(Group) & Type == 1, InformationSharing_A3);
InformationShared_C3 = find(same(Group) & Type == 3, InformationSharing_C3);
InformationShared_D3 = find(same(Group) & Type == 4, InformationSharing_D3);
InformationShared_A4 = find(same(Group) & Type == 1, InformationSharing_A4);
CandidateSharing_B4 = 0;

Active screen
  Info Shared
    Find the information your colleague shared with you so far below:
    OUT( InformationShared_A1 )
    OUT( InformationShared_C1 )
    OUT( InformationShared_D1 )
    OUT( InformationShared_A2 )
    OUT( InformationShared_C2 )
    OUT( InformationShared_D2 )
    OUT( InformationShared_A3 )
    OUT( InformationShared_C3 )
    OUT( InformationShared_D3 )
    OUT( InformationShared_A4 )
  Your Turn
    It is your turn again!
    Find your colleague's current preference below:
    OUT( CandidateDisplay_A4 )
    OUT( CandidateDisplay_C3 )
    OUT( CandidateDisplay_D3 )
    As a reminder, this is the information available to you: - Candidate 1 got fired from his/her old job for
    Last round you preferred: : OUT( CandidateDisplay_B3 )

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Last round you preferred: : OUT( CandidateDisplay_B3 )
Please choose your current candidate preference:: IN( CandidateSharing_B4 )
Do you want to share information about any of the candidates with your colleagues?: IN( Info_B4 )
Thanks! Let's see what your colleagues have to say...

Waitingscreen
  Waiting Text
    Currently your colleagues are discussing the candidates. Please wait for your turn to talk.

R4 B_INFO YES == (360)
  subjects.do { ... }
    InfoYes_B4 = find(same(Group) & Type == 2, Info_B4);
  subjects.do { ... }
    Participate = if(Type == 2 & InfoYes_B4 == 1, 1, 0);
  subjects.do { ... }
    CandidateShared_B4 = find(same(Group) & Type == 2, CandidateSharing_B4);
    InformationSharing_B4=0;

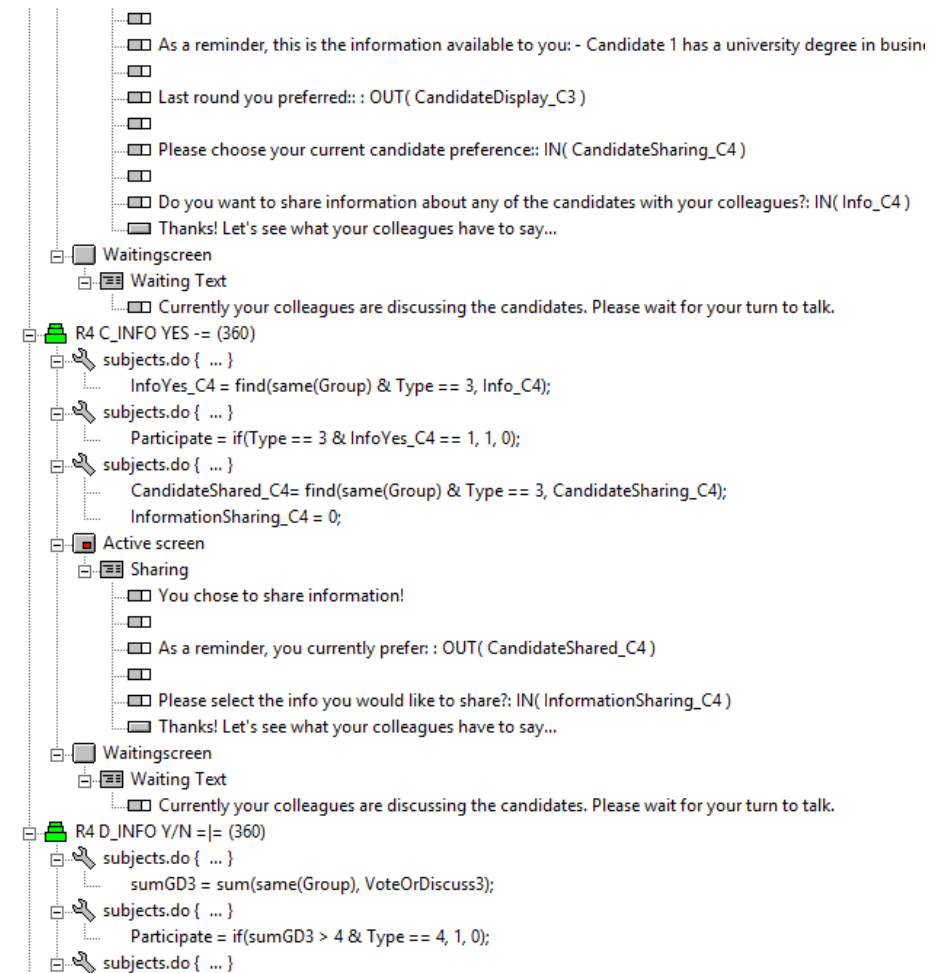
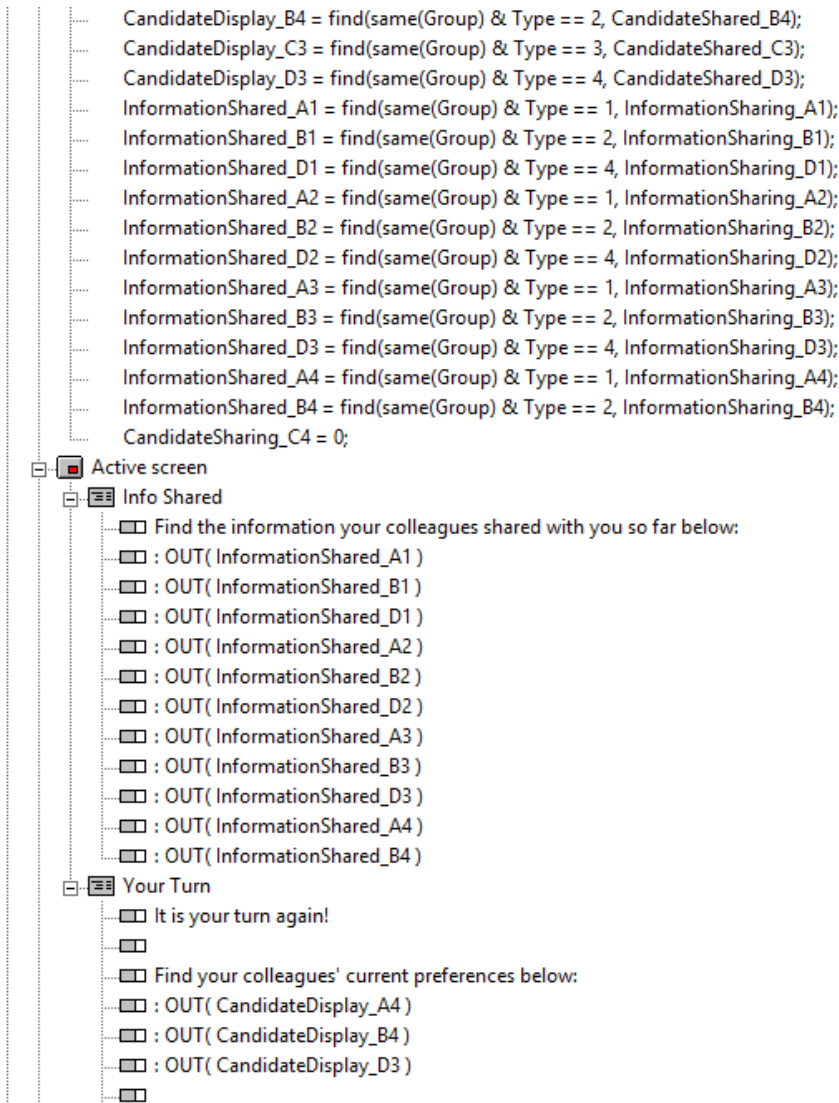
Active screen
  Sharing
    You chose to share information!
    As a reminder, you currently prefer: : OUT( CandidateShared_B4 )
    Please select the info you would like to share?: IN( InformationSharing_B4 )
    Thanks! Let's see what your colleagues have to say...

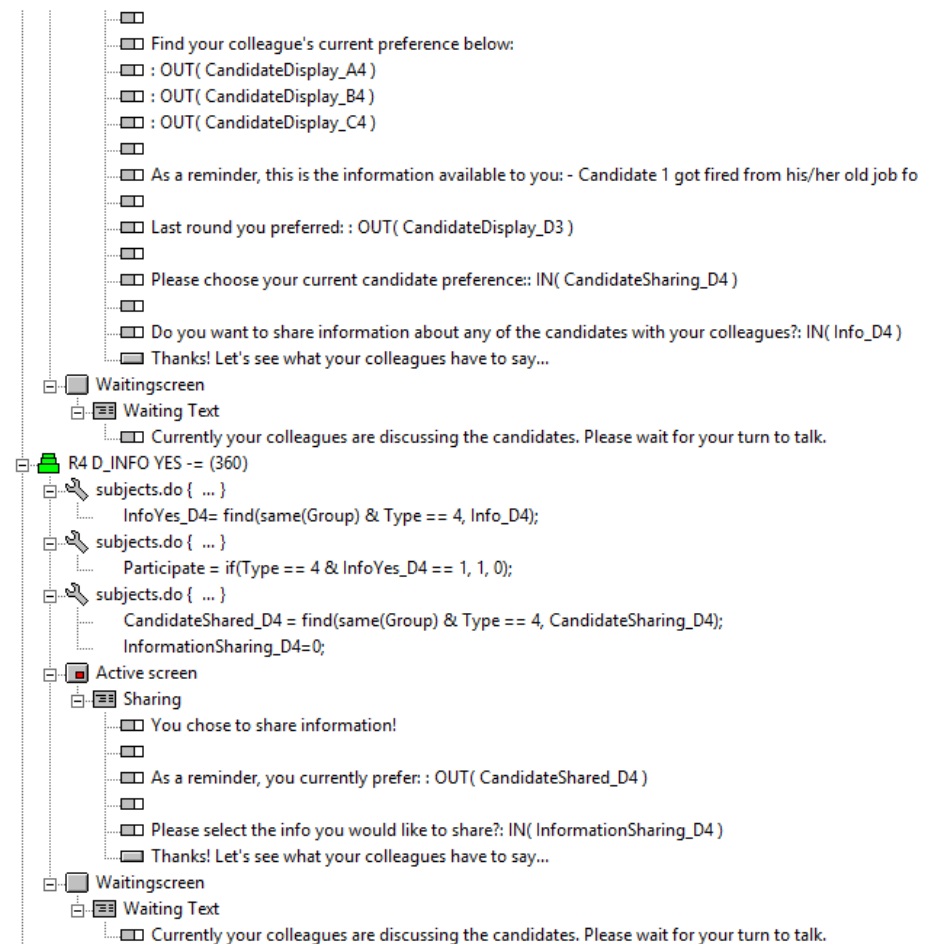
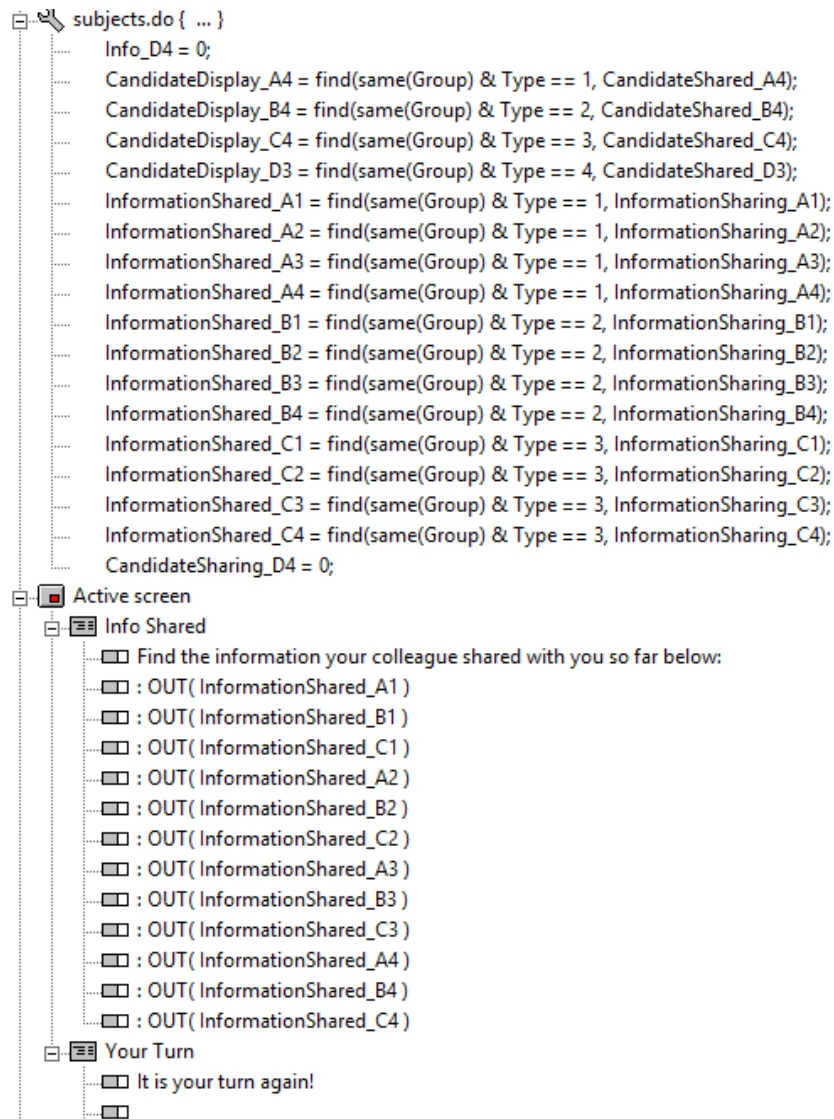
Waitingscreen
  Waiting Text
    Currently your colleagues are discussing the candidates. Please wait for your turn to talk.

R4 C_INFO Y/N != (360)
  subjects.do { ... }
    sumGD3 = sum(same(Group), VoteOrDiscuss3);
  subjects.do { ... }
    Participate = if(sumGD3 > 4 & Type == 3, 1, 0);
  subjects.do { ... }
    Info_C4 = 0;
    CandidateDisplay_A4 = find(same(Group) & Type == 1, CandidateShared_A4);
    CandidateDisplay_B4 = find(same(Group) & Type == 2, CandidateShared_B4);

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Summary & Voting 4 =| (360)
  subjects.do { ... }
    sumGD3 = sum(same(Group), VoteOrDiscuss3);
  subjects.do { ... }
    Participate = if(sumGD3 > 4, 1, 0);
  subjects.do { ... }
    CandidateDisplay_D4 = find(same(Group) & Type == 4, CandidateShared_D4);
  subjects.do { ... }
    VoteOrDiscuss4 = 0;
    CandidateSummary_A4 = find(same(Group) & Type == 1, CandidateDisplay_A4);
    CandidateSummary_B4 = find(same(Group) & Type == 2, CandidateDisplay_B4);
    CandidateSummary_C4 = find(same(Group) & Type == 3, CandidateDisplay_C4);
    CandidateSummary_D4 = find(same(Group) & Type == 4, CandidateDisplay_D4);
    InformationShared_A1 = find(same(Group) & Type == 1, InformationSharing_A1);
    InformationShared_B1 = find(same(Group) & Type == 2, InformationSharing_B1);
    InformationShared_C1 = find(same(Group) & Type == 3, InformationSharing_C1);
    InformationShared_D1 = find(same(Group) & Type == 4, InformationSharing_D1);
    InformationShared_A2 = find(same(Group) & Type == 1, InformationSharing_A2);
    InformationShared_B2 = find(same(Group) & Type == 2, InformationSharing_B2);
    InformationShared_C2 = find(same(Group) & Type == 3, InformationSharing_C2);
    InformationShared_D2 = find(same(Group) & Type == 4, InformationSharing_D2);
    InformationShared_A3 = find(same(Group) & Type == 1, InformationSharing_A3);
    InformationShared_B3 = find(same(Group) & Type == 2, InformationSharing_B3);
    InformationShared_C3 = find(same(Group) & Type == 3, InformationSharing_C3);
    InformationShared_D3 = find(same(Group) & Type == 4, InformationSharing_D3);
    InformationShared_A4 = find(same(Group) & Type == 1, InformationSharing_A4);
    InformationShared_B4 = find(same(Group) & Type == 2, InformationSharing_B4);
    InformationShared_C4 = find(same(Group) & Type == 3, InformationSharing_C4);
    InformationShared_D4 = find(same(Group) & Type == 4, InformationSharing_D4);

Active screen
  Info Shared
    Find the information shared so far:
    : OUT( InformationShared_A1 )
    : OUT( InformationShared_B1 )
    : OUT( InformationShared_C1 )
    : OUT( InformationShared_D1 )
    : OUT( InformationShared_A2 )

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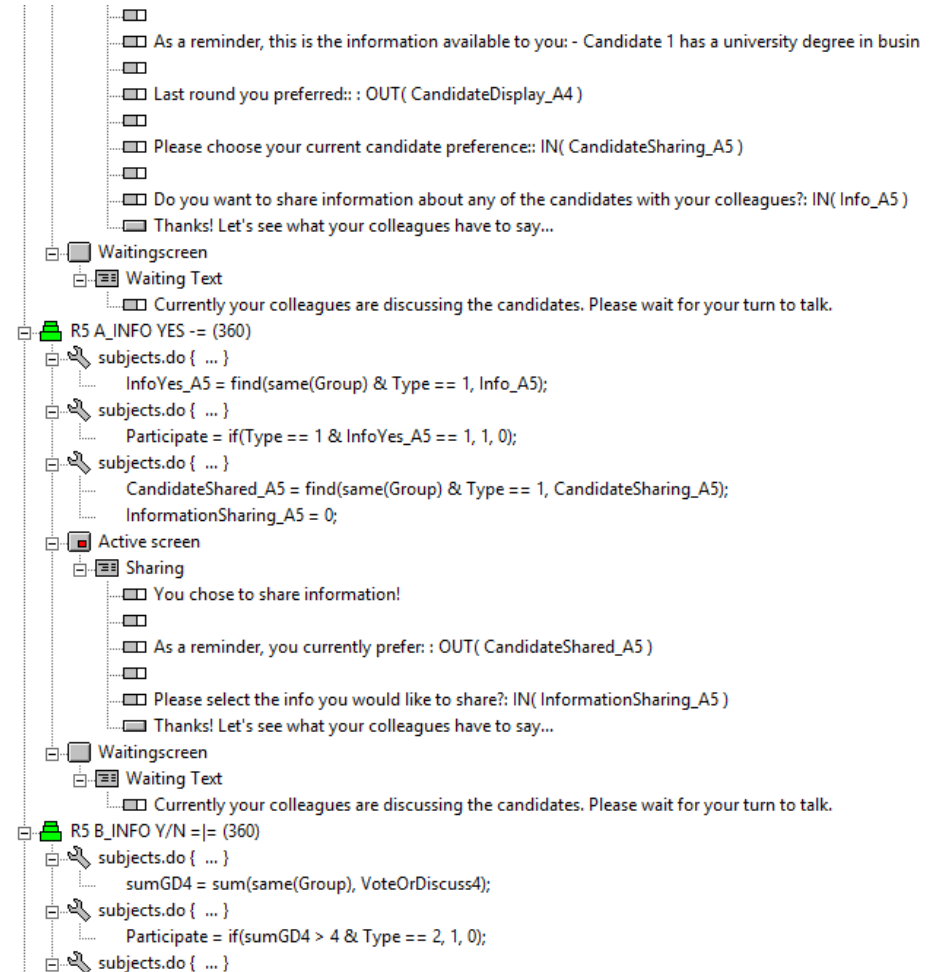
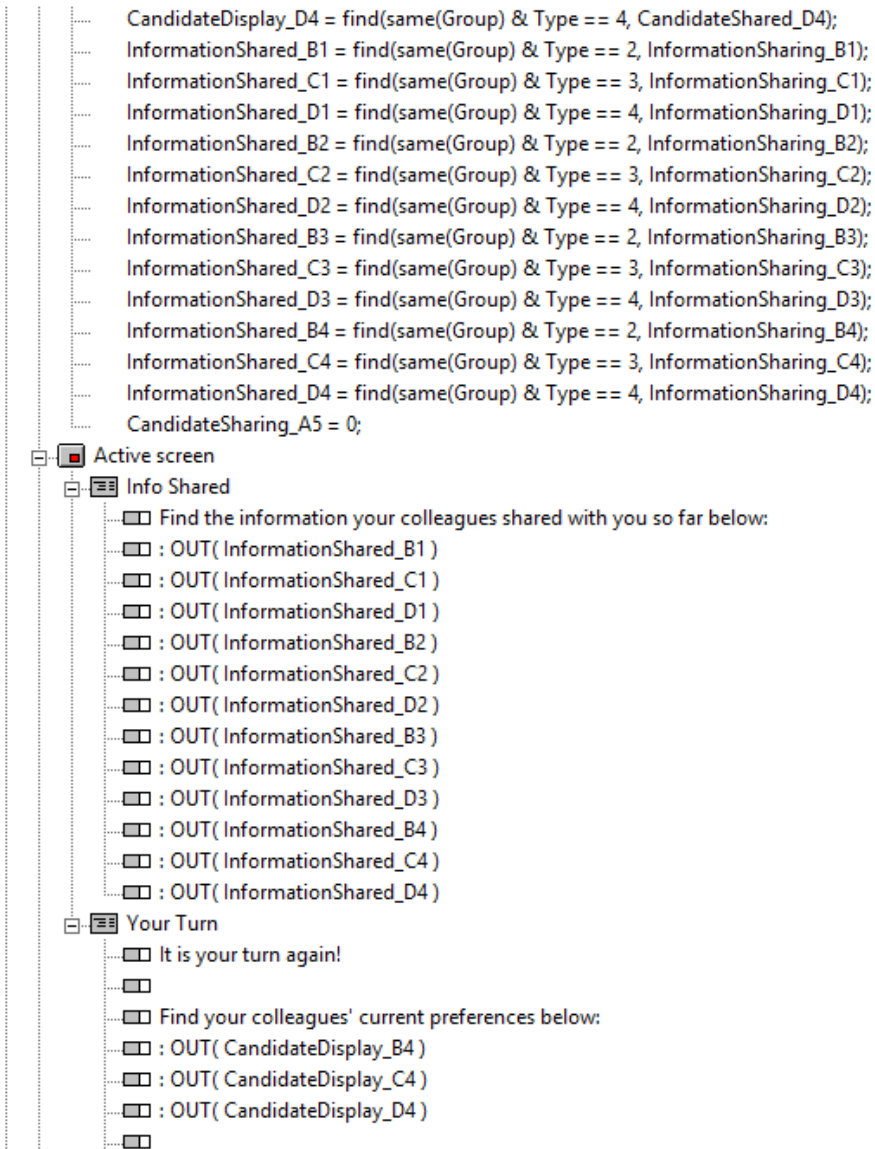
: OUT( InformationShared_A2 )
: OUT( InformationShared_B2 )
: OUT( InformationShared_C2 )
: OUT( InformationShared_D2 )
: OUT( InformationShared_A3 )
: OUT( InformationShared_B3 )
: OUT( InformationShared_C3 )
: OUT( InformationShared_D3 )
: OUT( InformationShared_A4 )
: OUT( InformationShared_B4 )
: OUT( InformationShared_C4 )
: OUT( InformationShared_D4 )

Summary
  The fourth round is over. You have the chance to propose an anonymous cand
  Find all current candidate preferences below:
  : OUT( CandidateSummary_A4 )
  : OUT( CandidateSummary_B4 )
  : OUT( CandidateSummary_C4 )
  : OUT( CandidateSummary_D4 )
  What should happen next?: IN( VoteOrDiscuss4 )
  OK!

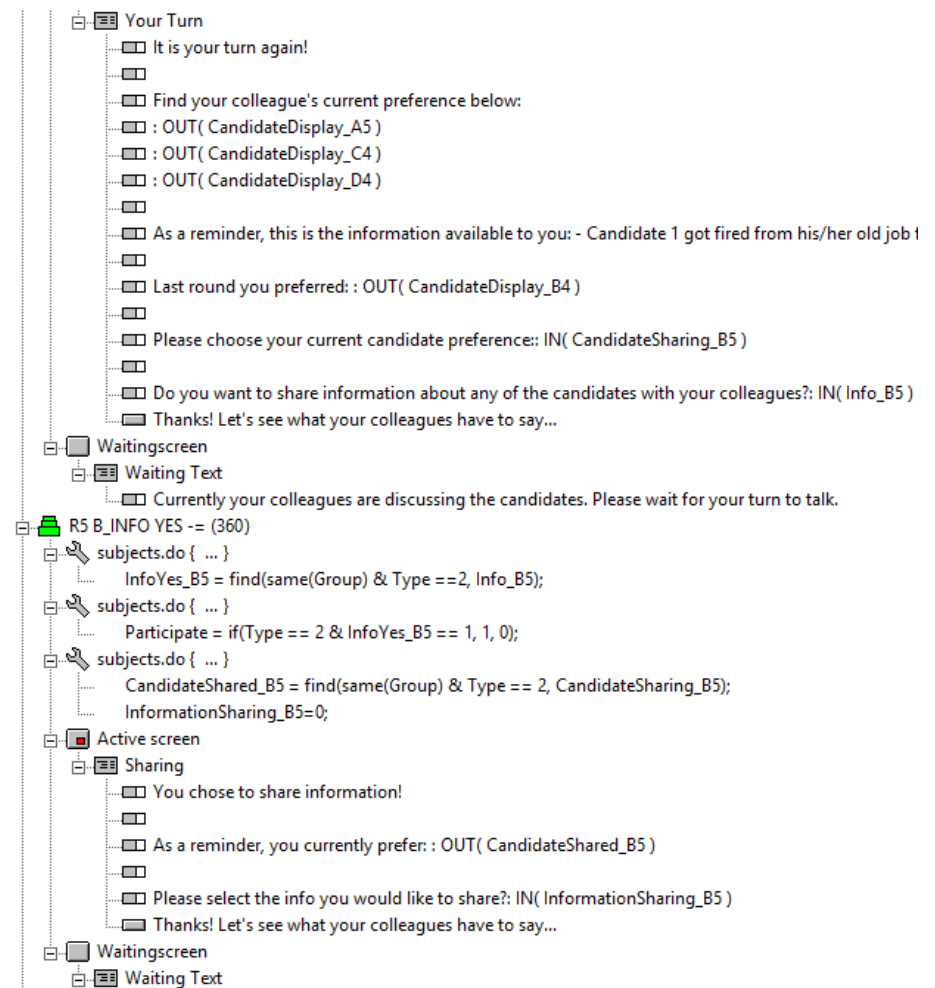
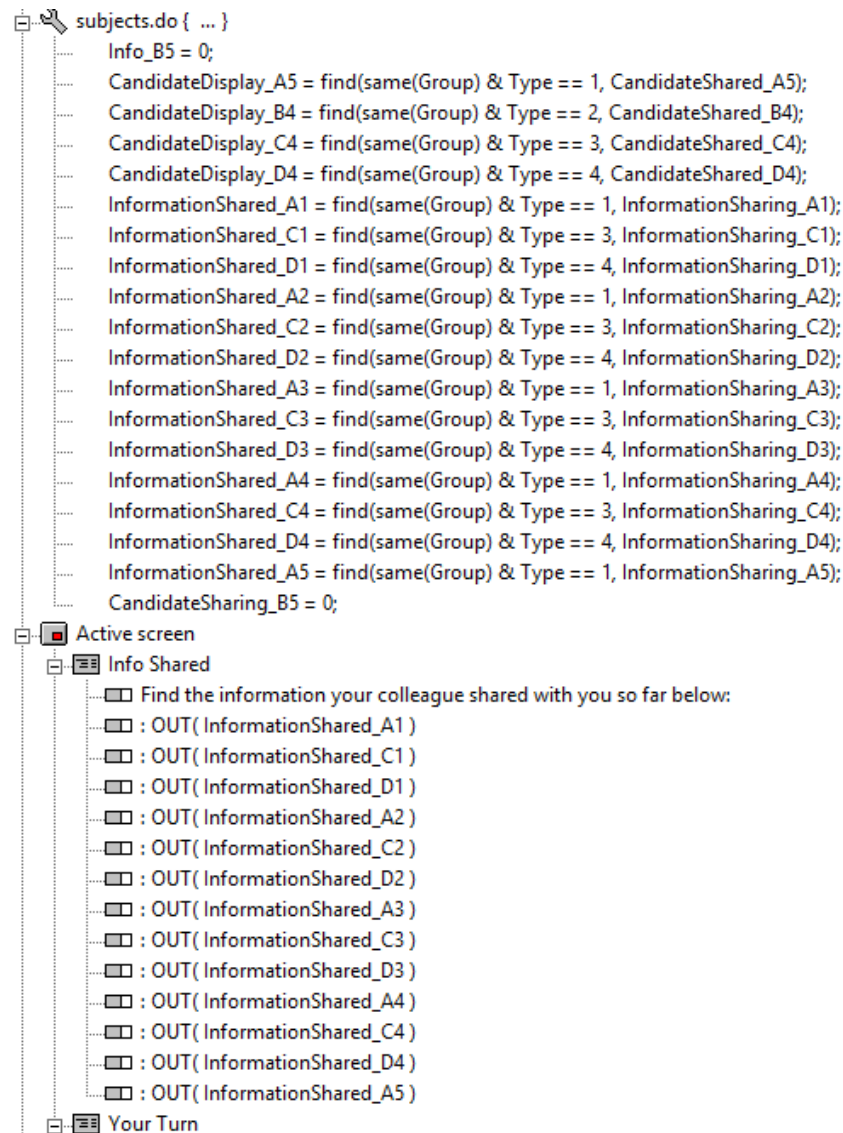
Waiting screen
  Waiting Text
    Let's see what your colleagues have to say...

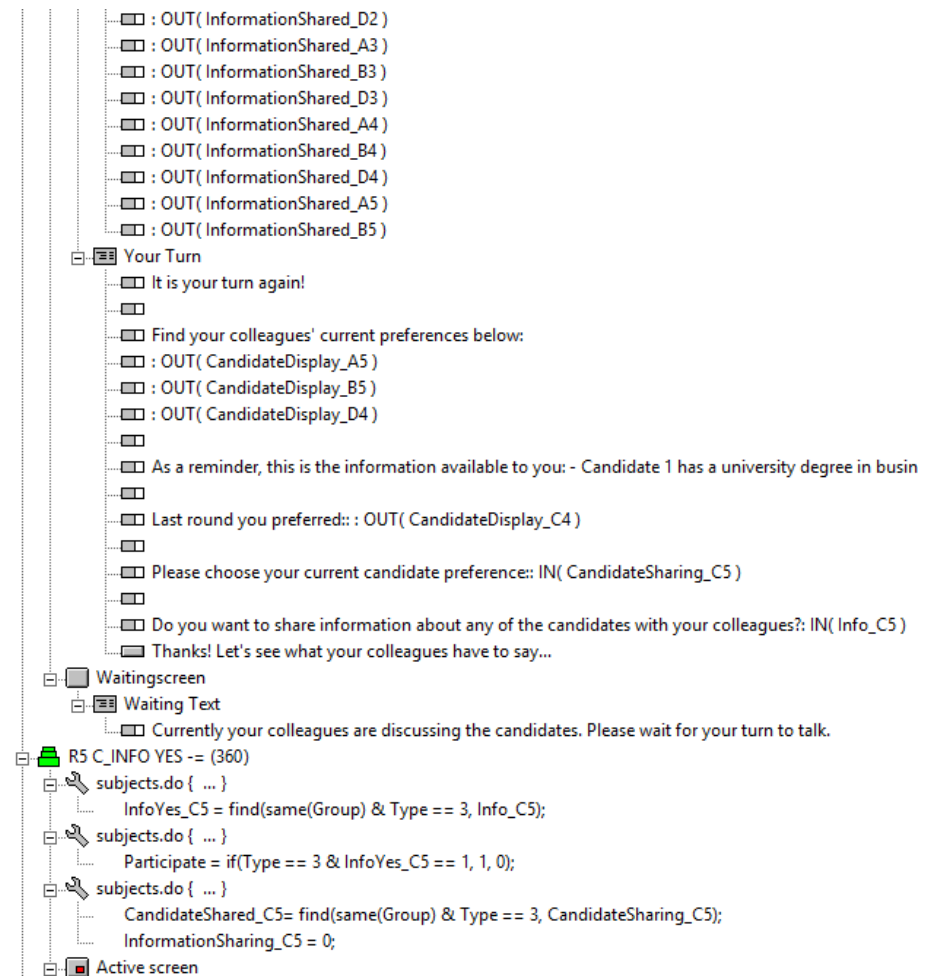
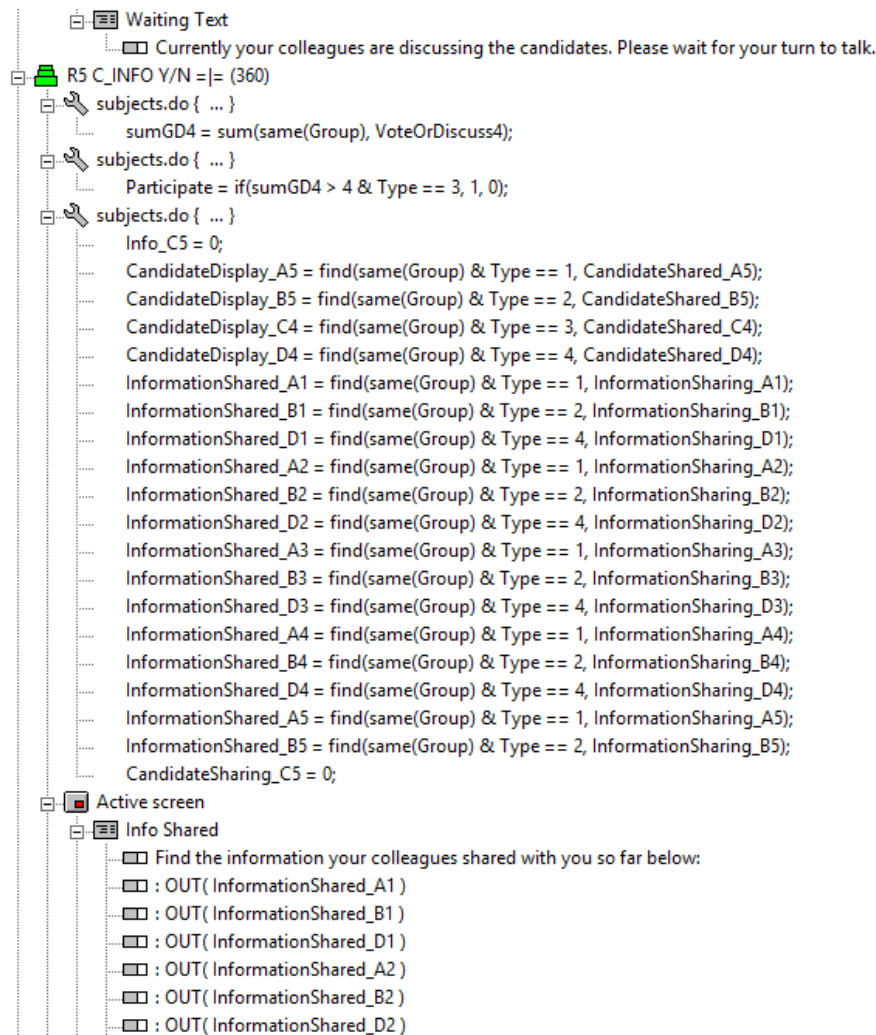
R5 A_INFO Y/N =| (360)
  subjects.do { ... }
    sumGD3 = sum(same(Group), VoteOrDiscuss3);
  subjects.do { ... }
    Participate = if(sumGD3 > 4 & Type == 1, 1, 0);
  subjects.do { ... }
    Info_A5 = 0;
    CandidateDisplay_A4 = find(same(Group) & Type == 1, CandidateShared_A4);
    CandidateDisplay_B4 = find(same(Group) & Type == 2, CandidateShared_B4);
    CandidateDisplay_C4 = find(same(Group) & Type == 3, CandidateShared_C4);
    CandidateDisplay_D4 = find(same(Group) & Type == 4, CandidateShared_D4);

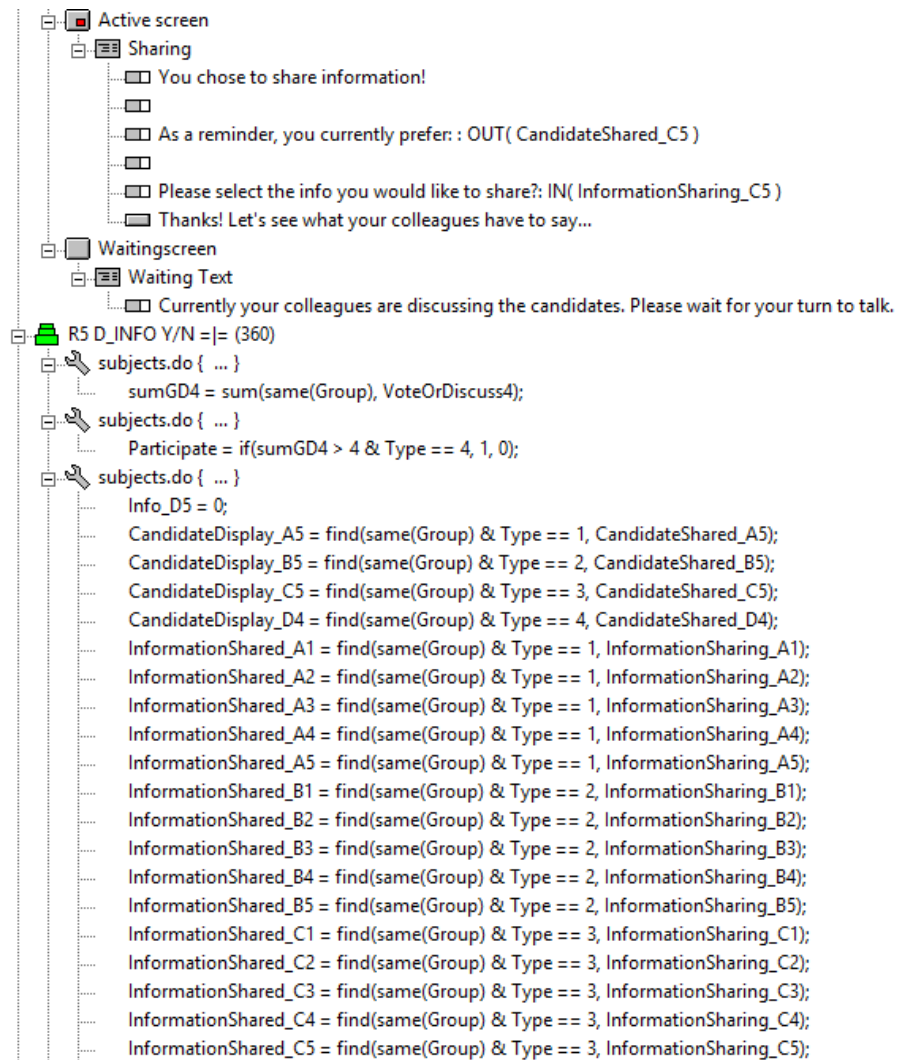
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R5 D_INFO YES -= (360)
  subjects.do { ... }
    InfoYes_D5= find(same(Group) & Type == 4, Info_D5);
  subjects.do { ... }
    Participate = if(Type == 4 & InfoYes_D5 == 1, 1, 0);
  subjects.do { ... }
    CandidateShared_D5 = find(same(Group) & Type == 4, CandidateSharing_D5);
    InformationSharing_D5=0;
  Active screen
    Sharing
      You chose to share information!
      As a reminder, you currently prefer: : OUT( CandidateShared_D5 )
      Please select the info you would like to share?: IN( InformationSharing_D5 )
      Thanks! Let's see what your colleagues have to say...
    WaitingScreen
      Waiting Text
      Currently your colleagues are discussing the candidates. Please wait for your turn to talk.
Summary & Voting 5 =|= (360)
  subjects.do { ... }
    sumGD4 = sum(same(Group), VoteOrDiscuss4);
  subjects.do { ... }
    Participate = if(sumGD4 > 4, 1, 0);
  subjects.do { ... }
    CandidateDisplay_D5 = find(same(Group) & Type == 4, CandidateShared_D5);
  subjects.do { ... }
    VoteOrDiscuss5 = 0;
    CandidateSummary_A5 = find(same(Group) & Type == 1, CandidateDisplay_A5);
    CandidateSummary_B5 = find(same(Group) & Type == 2, CandidateDisplay_B5);
    CandidateSummary_C5 = find(same(Group) & Type == 3, CandidateDisplay_C5);
    CandidateSummary_D5 = find(same(Group) & Type == 4, CandidateDisplay_D5);
    InformationShared_A1 = find(same(Group) & Type == 1, InformationSharing_A1);
    InformationShared_B1 = find(same(Group) & Type == 2, InformationSharing_B1);
    InformationShared_C1 = find(same(Group) & Type == 3, InformationSharing_C1);
    InformationShared_D1 = find(same(Group) & Type == 4, InformationSharing_D1);
    InformationShared_A2 = find(same(Group) & Type == 1, InformationSharing_A2);

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InformationShared_A2 = find(same(Group) & Type == 1, InformationSharing_A2);
InformationShared_B2 = find(same(Group) & Type == 2, InformationSharing_B2);
InformationShared_C2 = find(same(Group) & Type == 3, InformationSharing_C2);
InformationShared_D2 = find(same(Group) & Type == 4, InformationSharing_D2);
InformationShared_A3 = find(same(Group) & Type == 1, InformationSharing_A3);
InformationShared_B3 = find(same(Group) & Type == 2, InformationSharing_B3);
InformationShared_C3 = find(same(Group) & Type == 3, InformationSharing_C3);
InformationShared_D3 = find(same(Group) & Type == 4, InformationSharing_D3);
InformationShared_A4 = find(same(Group) & Type == 1, InformationSharing_A4);
InformationShared_B4 = find(same(Group) & Type == 2, InformationSharing_B4);
InformationShared_C4 = find(same(Group) & Type == 3, InformationSharing_C4);
InformationShared_D4 = find(same(Group) & Type == 4, InformationSharing_D4);
InformationShared_A5 = find(same(Group) & Type == 1, InformationSharing_A5);
InformationShared_B5 = find(same(Group) & Type == 2, InformationSharing_B5);
InformationShared_C5 = find(same(Group) & Type == 3, InformationSharing_C5);
InformationShared_D5 = find(same(Group) & Type == 4, InformationSharing_D5);

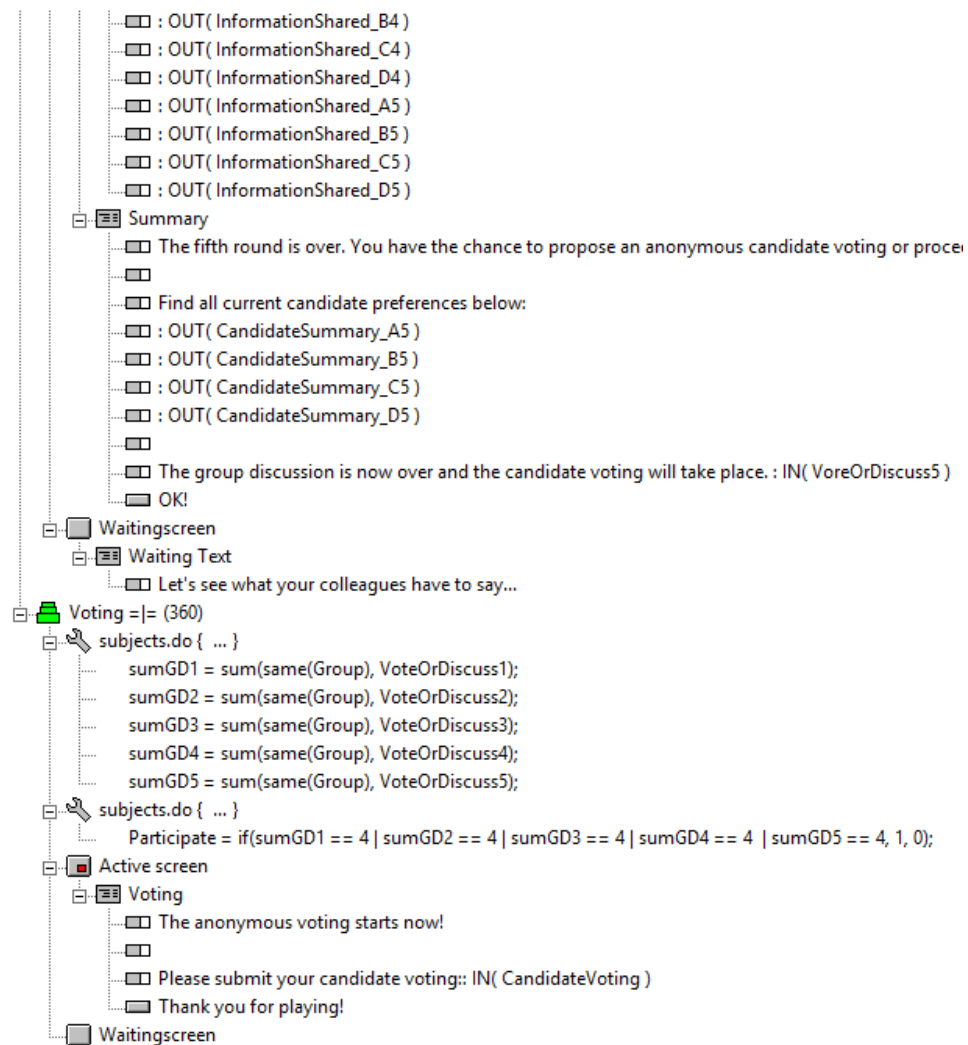
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Active screen
  Info Shared
    Find the information shared so far:
    OUT( InformationShared_A1 )
    OUT( InformationShared_B1 )
    OUT( InformationShared_C1 )
    OUT( InformationShared_D1 )
    OUT( InformationShared_A2 )
    OUT( InformationShared_B2 )
    OUT( InformationShared_C2 )
    OUT( InformationShared_D2 )
    OUT( InformationShared_A3 )
    OUT( InformationShared_B3 )
    OUT( InformationShared_C3 )
    OUT( InformationShared_D3 )
    OUT( InformationShared_A4 )
    OUT( InformationShared_B4 )
    OUT( InformationShared_C4 )
    OUT( InformationShared_D4 )
    OUT( InformationShared_A5 )
    OUT( InformationShared_B5 )


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### Exemplary excerpts of the experiment:

Periode <div style="text-align: center;">1 von 1</div>	Verbleibende Zeit [sec]: 347
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You are presented with a hiring decision.

Two candidates applied for a job vacancy at your firm. Your boss asked you and three of your colleagues to discuss all candidates as a group and select ONE candidate to invite for a job interview. Candidates are ultimately elected by vote.

Before a group discussion starts, you will get a chance to look at each candidate's qualifications individually and decide for yourself which person is most suitable for the job. After that, you will meet with your colleagues to discuss the candidates.

If the candidate you selected before the group discussion is also the one presented to your boss by the group after the group discussion, you can take credit and improve your standing within the firm. However, you are also allowed to change your mind about candidates during the course of the discussion.

Keep in mind that your boss wants to fill the vacant position very urgently and that he needs a final decision from your group as soon as possible.

Before we start please indicate your gender:

☐ Male

☐ Female


Everything understood - Let's start!

Figure 4: Task description (Treatment A: “random repeated”)

Periode

1 von 1

Verbleibende Zeit [sec]: 328



You have to select a candidate for the position of

SENIOR HUMAN RESOURCE MANAGER

You would prefer an applicant...

- ... with a university degree in business administration
- ... with a minimum of ten years of working experience

Please find the candidate descriptions available to you below:

Candidate 1	Candidate 2
<ul style="list-style-type: none"> <li>... has a university degree in business administration</li> <li>... has eleven years of working experience</li> <li>... held a leadership position at the old firm</li> <li>... regularly attends training seminars</li> <li>... seems to have great people-skills</li> </ul>	<ul style="list-style-type: none"> <li>... has five years of working experience</li> <li>... has an unexplained three year gap in CV</li> <li>... demands additional benefits, such as a company car or work cell</li> <li>... is said to have an authoritarian leadership style</li> <li>... needs a minimum of one day per week as home office</li> </ul>

Which candidate do you personally prefer at this point in time?

☐ Candidate 1
 ☐ Candidate 2


Decision made! Next, the group discussion will start...

Figure 5: Candidate descriptions, Agent A & Agent C (Treatment A: “random repeated”)

Periode

1 von 1

Verbleibende Zeit [sec]: 296



You have to select a candidate for the position of

SENIOR HUMAN RESOURCE MANAGER

You would prefer an applicant...

- ... with a great reputation at the old firm
- ... with international working experience

Please find the candidate descriptions available to you below:

Candidate 1	Candidate 2
<ul style="list-style-type: none"> <li>... got fired from his/her old job for unknown reasons</li> <li>... has salary expectations over budget</li> <li>... would be unable to relocate for work</li> <li>... demands an additional week of holidays per year</li> <li>... seemed uninterested in the job when first talking on the phone</li> </ul>	<ul style="list-style-type: none"> <li>... has prior working experience in London and Chicago</li> <li>... has an excellent recommendation from his/her old firm</li> <li>... brings extensive SAP skills important for the position</li> <li>... speaks four languages fluently, all relevant to the firm</li> <li>... seemed enthusiastic about the job when first talking on the phone</li> </ul>

Which candidate do you personally prefer at this point in time?

☐ Candidate 1  
☐ Candidate 2

Decision made! Next, the group discussion will start...

Figure 6: Candidate descriptions, Agent A & Agent C (Treatment A: “random repeated”)

Periode

1 von 1

Verbleibende Zeit [sec]: 345



Let's start with the group discussion. You will be meeting with three of your colleagues in a conference room shortly to discuss which of the two candidates you as a group want to present to your boss.

When it is your turn to talk, you **HAVE** to share your candidate preference with your colleagues, but you **CAN** choose to share **ONE** candidate-specific information with your discussion group.

After one round of discussing, you are allowed to stop the discussion and suggest a candidate voting to choose a candidate for presentation. Only if all members of your group want to vote for a candidate, the candidate voting will actually take place, otherwise, the group discussion will go on. Candidate votings will be anonymous, so the ultimate outcome will not be published.

There will be a total of five discussion rounds, which means you have the chance to voice your opinion six times. If nobody suggested a candidate voting until then, you will enter the voting stage automatically.

Please keep in mind that the group discussion is there to collect as much information about the two candidates as possible, however, do not feel pressured to share information if you do not want to.

**OK! Let's enter the conference room and find a great candidate.**

Figure 7: Introduction before the group discussion (Treatment A: "random repeated")

Periode	Verbleibende Zeit [sec]: 355
1 von 1	
<p>It is your turn!</p> <p>As a reminder, you initially preferred: Candidate 1</p> <p>As you are the first person to speak, your initial candidate preference will be shared with your colleagues.</p> <p>Do you want to share information about any of the candidates with your colleagues? <input type="radio"/> Yes <input type="radio"/> No</p> <p>Thanks! Let's see what your colleagues have to say...</p>	

Figure 8: Discussion round 1, Agent A (Treatment A: “random repeated”)

Periode <div style="text-align: center; margin-top: 10px;">1 von 1</div>	Verbleibende Zeit [sec]: 349
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Find the information your colleague shared with you so far below:

Candidate 1 has eleven years of working experience

Your colleague opened the discussion.

Find your colleague's current preference below:

Candidate 1

Now it is your turn!

As a reminder, this is the information available to you:

- Candidate 1 got fired from his/her old job for unknown reasons
- Candidate 1 has salary expectations over budget
- Candidate 1 would be unable to relocate for work
- Candidate 1 demands an additional week of holidays per year
- Candidate 1 seemed uninterested in the job when first talking on the phone
- Candidate 2 has prior working experience in London and Chicago
- Candidate 2 has an excellent recommendation from his/her old firm
- Candidate 2 brings extensive SAP skills important for the position
- Candidate 2 speaks four languages fluently, all relevant to the firm
- Candidate 2 seemed enthusiastic about the job when first talking on the phone

You initially preferred: Candidate 2

Please choose your current candidate preference: ☐ Candidate 1  
☐ Candidate 2

Do you want to share information about any of the candidates with your colleagues? ☐ Yes  
☐ No

Thanks! Let's see what your colleagues have to say...

Figure 9: Discussion round 1, Agent B (Treatment A: “random repeated”)

Periode <div style="text-align: center; margin-top: 10px;">1 von 1</div>	Verbleibende Zeit [sec]: 358
<p style="text-align: center;">Find the information shared so far:</p> <p>Candidate 1 has eleven years of working experience</p> <p>Candidate 2 has prior working experience in London and Chicago</p> <p>No information was shared</p> <p>Candidate 2 speaks four languages fluently, all relevant to the firm</p>	<p>The first round is over. As of now, you have the chance to propose an anonymous candidate voting or proceed with the group discussion to share and collect more information.</p> <p style="text-align: center;">Find all current candidate preferences below:</p> <div style="text-align: center;"> <p>Candidate 1</p> <p>Candidate 2</p> <p>Candidate 1</p> <p>Candidate 2</p> </div> <p>What should happen next?</p> <div style="display: flex; justify-content: center; gap: 20px;"> <span><input type="radio"/> Candidate Voting</span> <span><input type="radio"/> Group Discussion</span> </div>   <div style="text-align: right; margin-top: 20px;"> <div style="background-color: red; color: white; padding: 5px 10px; border: 1px solid black;">OK!</div> </div>

Figure 10: Round 1, summary of candidate preferences and information shared (Treatment A: “random repeated”)



Periode <div style="text-align: center; margin-top: 10px;">1 von 1</div>	Verbleibende Zeit [sec]: 353
<p style="text-align: center;">Find the information shared so far:</p> <p>Candidate 1 has eleven years of working experience</p> <p>Candidate 2 has prior working experience in London and Chicago</p> <p>No information was shared</p> <p>Candidate 2 speaks four languages fluently, all relevant to the firm</p> <p>Candidate 1 seems to have great people-skills</p> <p>Candidate 2 seemed enthusiastic about the job when first talking on the phone</p> <p>No information was shared</p> <p>Candidate 2 has an excellent recommendation from his/her old firm</p>	<p>The second round is over. You have the chance to propose an anonymous candidate voting or proceed with the group discussion to share and collect more information.</p> <p style="text-align: center;">Find all current candidate preferences below:</p> <p style="text-align: right;">Candidate 1</p> <p style="text-align: right;">Candidate 2</p> <p style="text-align: right;">Candidate 1</p> <p style="text-align: right;">Candidate 2</p> <p>What should happen next? <input type="radio"/> Candidate Voting <input type="radio"/> Group Discussion</p>    <div style="text-align: right; margin-top: 20px;"> <div style="border: 1px solid black; background-color: red; color: white; padding: 5px 10px; display: inline-block;">OK!</div> </div>

Figure 11: Round 2, summary of candidate preferences and information shared (Treatment A: “random repeated”)

Periode <div style="text-align: center; margin-top: 10px;">1 von 1</div>	Verbleibende Zeit [sec]: 356
<p style="text-align: center;">Find the information shared so far:</p> <p>Candidate 1 has eleven years of working experience</p> <p>Candidate 2 has prior working experience in London and Chicago</p> <p>No information was shared</p> <p>Candidate 2 speaks four languages fluently, all relevant to the firm</p> <p>Candidate 1 seems to have great people-skills</p> <p>Candidate 2 seemed enthusiastic about the job when first talking on the phone</p> <p>No information was shared</p> <p>Candidate 2 has an excellent recommendation from his/her old firm</p> <p>Candidate 1 has a university degree in business administration</p> <p>Candidate 2 has prior working experience in London and Chicago</p> <p>Candidate 1 held a leadership position at the old firm</p> <p>Candidate 2 brings extensive SAP skills important for the position</p>	<p>The third round is over. You have the chance to propose an anonymous candidate voting or proceed with the group discussion to share and collect more information.</p> <p style="text-align: center; margin-top: 20px;">Find all current candidate preferences below:</p> <div style="margin-left: 100px;"> <p>Candidate 1</p> <p>Candidate 2</p> <p>Candidate 1</p> <p>Candidate 2</p> </div> <p style="margin-top: 20px;">What should happen next?</p> <div style="margin-left: 100px;"> <input type="radio"/> Candidate Voting  <input type="radio"/> Group Discussion         </div> <div style="text-align: right; margin-top: 20px;"> <div style="border: 1px solid black; background-color: #f00; color: white; padding: 5px 10px; display: inline-block;">OK!</div> </div>

Figure 12: Round 3, summary of candidate preferences and information shared (Treatment A: “random repeated”)

Periode	1 von 1	Verbleibende Zeit [sec]: 357
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The anonymous voting starts now!

Please submit your candidate voting: ☐ I vote for candidate 1  
☐ I vote for candidate 2

Thank you for playing!

Figure 13: Final candidate voting (Treatment A: “random repeated”)

## *Experimental Procedure – Treatment B: “enthusiasm repeated”*

### **Task description:**

You are presented with a hiring decision.

Two candidates applied for a job vacancy at your firm. Your boss asked you and three of your colleagues to discuss all candidates as a group and select ONE candidate to invite for a job interview. Candidates are ultimately elected by vote.

Before a group discussion starts, you will get a chance to look at each candidate's qualifications individually and decide for yourself which person is most suitable for the job. After that, you will meet with your colleagues to discuss the candidates.

If the candidate you selected before the group discussion is also the one presented to your boss by the group after the group discussion, you can take credit and improve your standing within the firm. However, you are also allowed to change your mind about candidates during the course of the discussion.

Keep in mind that your boss wants to fill the vacant position very urgently and that he needs a final decision from your group as soon as possible.

Before we start please indicate your gender:

- ☐ male
- ☐ female

### **Candidate descriptions: Agent A**

You have to select a candidate for the position of RETAIL MANAGER

You would prefer an applicant...

- ... with relevant professional experience
- ... with great work ethics

Please find the candidate descriptions available to you below:

#### *Candidate 1*

- ... has experience with managing budgets
- ... is great at maintaining financial records
- ... has a background in business administration
- ... comes with great attention to detail
- ... is excellent with developing pricing strategies

#### *Candidate 2*

- ... was not able to reach performance goals at his/her previous firm
- ... has a reputation of making bad hiring decisions
- ... tends to lose his/her temper rather quickly
- ... is known to share company secrets with the competition
- ... is unwilling to manage more than one store

Which candidate do you personally prefer at this point in time?

- ☐ Candidate 1
- ☐ Candidate 2

### **Candidate descriptions: Agent B**

You have to select a candidate for the position of RETAIL MANAGER

You would prefer an applicant...

... with great team building abilities

... with an academic background

Please find the candidate descriptions available to you below:

#### *Candidate 1*

... is known to be impatient with customer complaints

... does not believe in team work and team building activities

... tends to go over budget with store investments

... is unwilling to work overtime

... is known to be an authoritarian leader

#### *Candidate 2*

... has excellent team development abilities

... has a background in marketing and sales

... is great at organizing promotional events

... introduced a cloud scheduling system at his/her old firm

... is willing to manage two or more stores in the near future

Which candidate do you personally prefer at this point in time?

☐ Candidate 1

☐ Candidate 2

### **Candidate descriptions: Agent C & Agent D**

You have to select a candidate for the position of RETAIL MANAGER

You have no prerequisites concerning the candidates.

Please find the candidate descriptions available to you below:

#### *Candidate 1*

... is known to be impatient with customer complaints

... does not believe in team work and team building activities

... tends to go over budget with store investments

... is unwilling to work overtime

... is known to be an authoritarian leader

#### *Candidate 2*

... was not able to reach performance goals at his/her previous firm

... has a reputation of making bad hiring decisions

... tends to lose his/her temper rather quickly

... is known to share company secrets with the competition

... is unwilling to manage more than one store

Which candidate do you personally prefer at this point in time?

☐ Candidate 1

☐ Candidate 2

**Introduction before the group discussion:**

Let's start with the group discussion. You will be meeting with three of your colleagues in a conference room shortly to discuss which of the two candidates you as a group want to present to your boss.

When it is your turn to talk, you HAVE to share your candidate preference with your colleagues, but you CAN choose to share ONE candidate-specific information with your discussion group.

After one round of discussing, you are allowed to stop the discussion and suggest a candidate voting to choose a candidate for presentation. Only if all members of your group want to vote for a candidate, the candidate voting will actually take place, otherwise, the group discussion will go on. Candidate votings will be anonymous, so the ultimate outcome will not be published.

There will be a total of five discussion rounds, which means you have the chance to voice your opinion six times. If nobody suggested a candidate voting until then, you will enter the voting stage automatically.

Please keep in mind that the group discussion is there to collect as much information about the two candidates as possible, however, do not feel pressured to share information if you do not want to.

**Summary & choice between candidate voting and group discussion after round 1-4:**

The first/second/third/fourth round is over. You have the chance to propose an anonymous candidate voting or proceed with the group discussion to share and collect more information.

Find all current candidate preferences below:

- current preference of agent A
- current preference of agent B
- current preference of agent C
- current preference of agent D

*- All information shared by the group members were displayed on the right -*

What should happen next? ☐ Candidate voting  
☐ Group discussion

**Summary & choice between candidate voting and group discussion after round 5:**

The fifth round is over. You have the chance to propose an anonymous candidate voting or proceed with the group discussion to share and collect more information.

Find all current candidate preferences below:

- current preference of agent A
- current preference of agent B
- current preference of agent C
- current preference of agent D

*- All information shared by the group members were displayed on the right -*

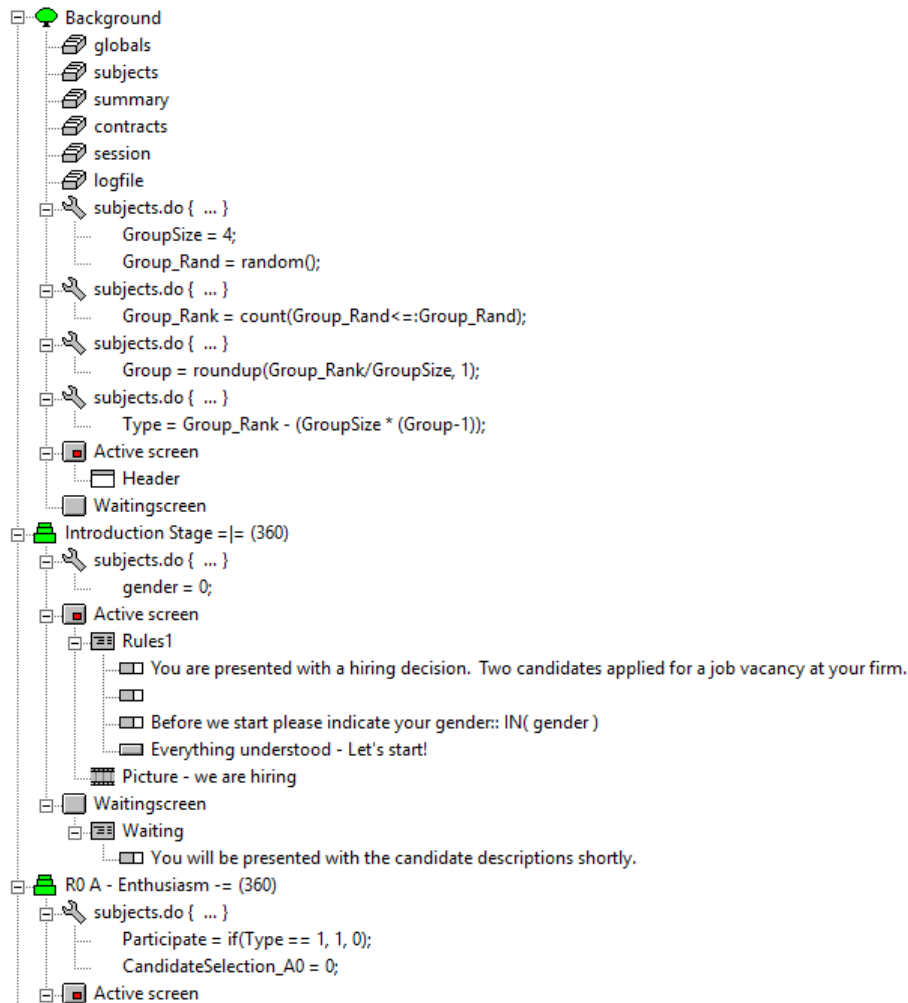
The group discussion is now over and the candidate voting will take place.

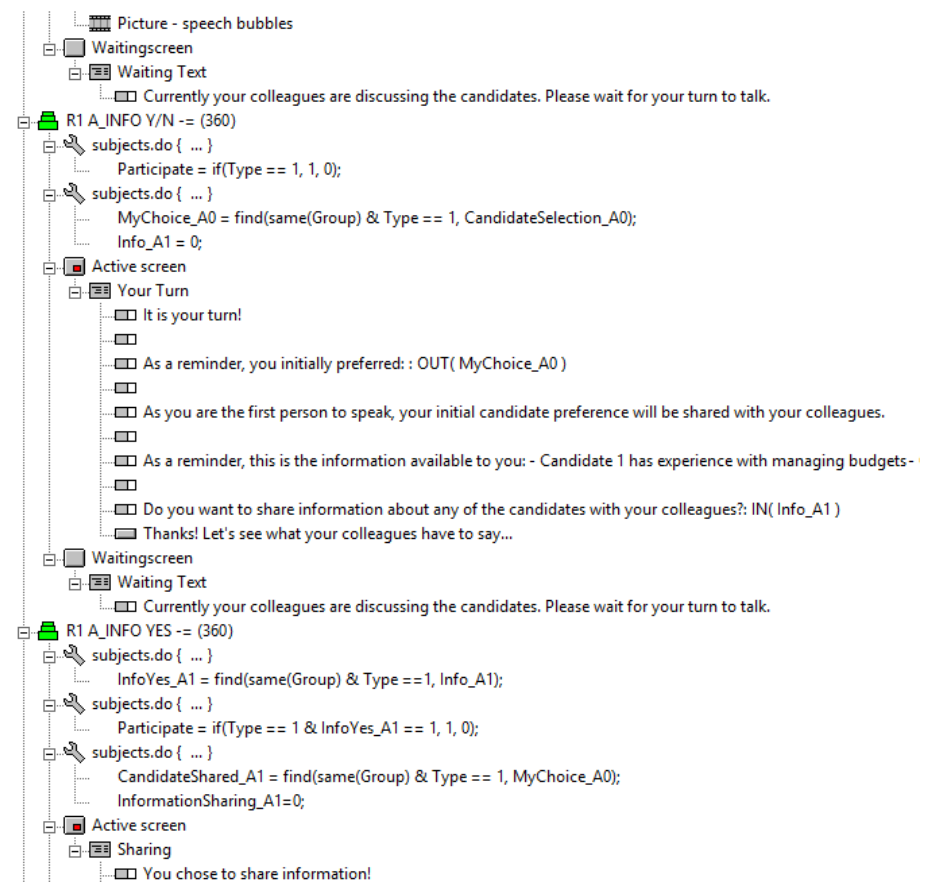
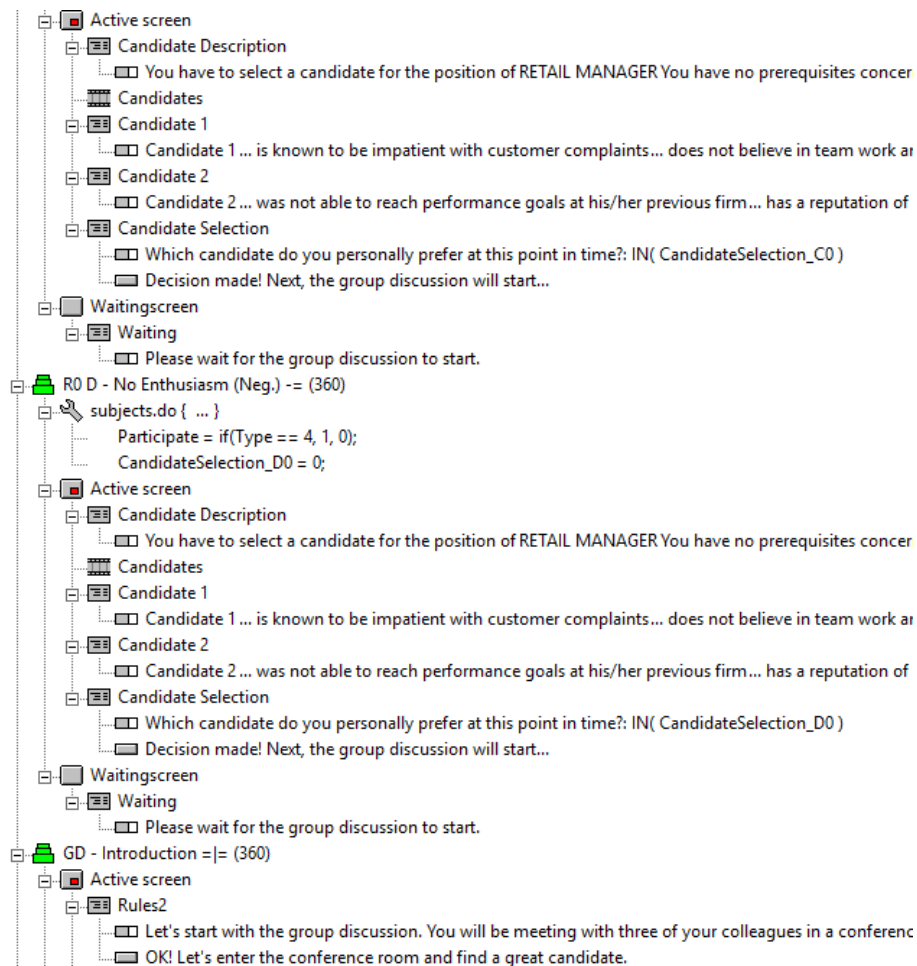
**Final candidate voting:**

The anonymous voting starts now!

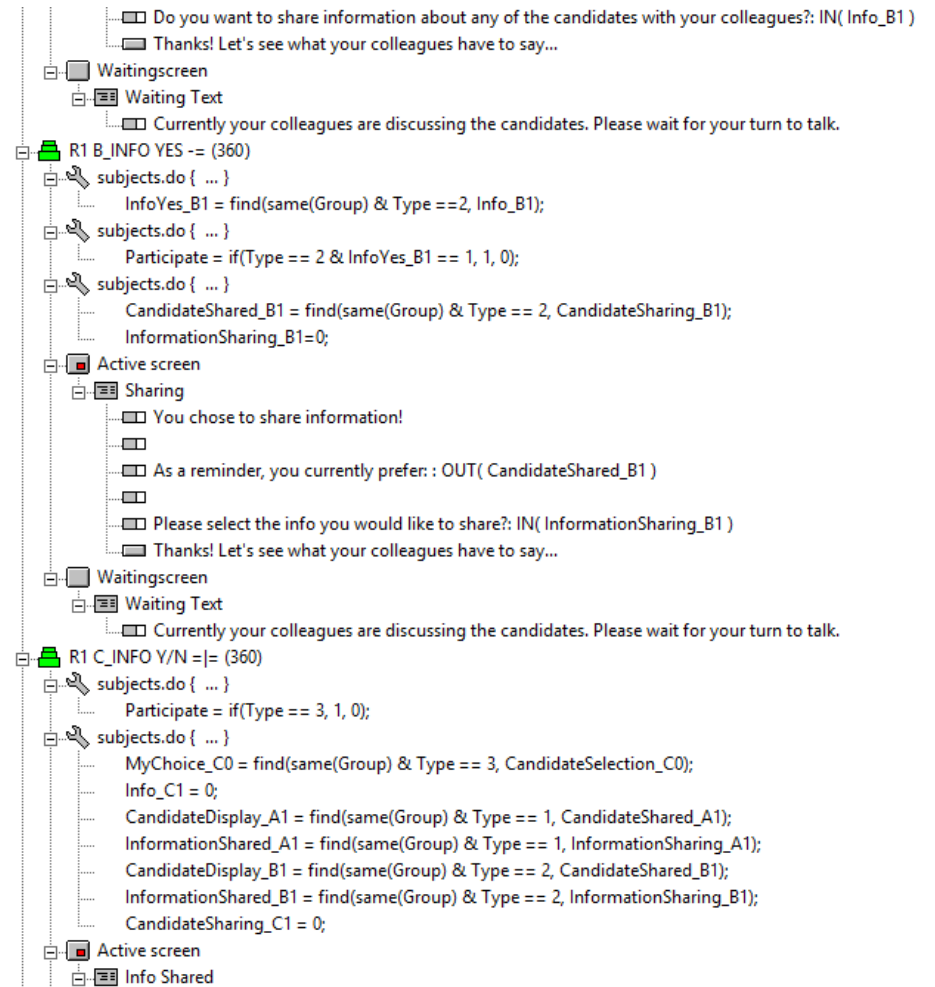
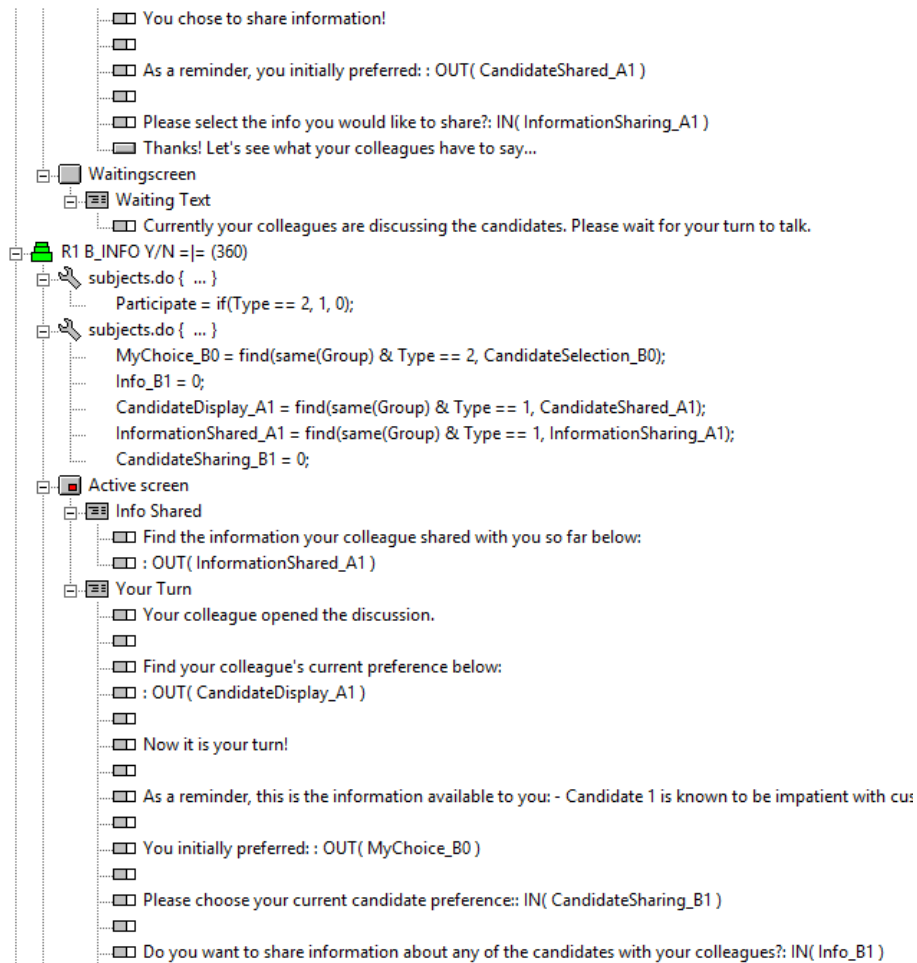
Please submit your candidate voting: ☐ Candidate 1  
☐ Candidate 2

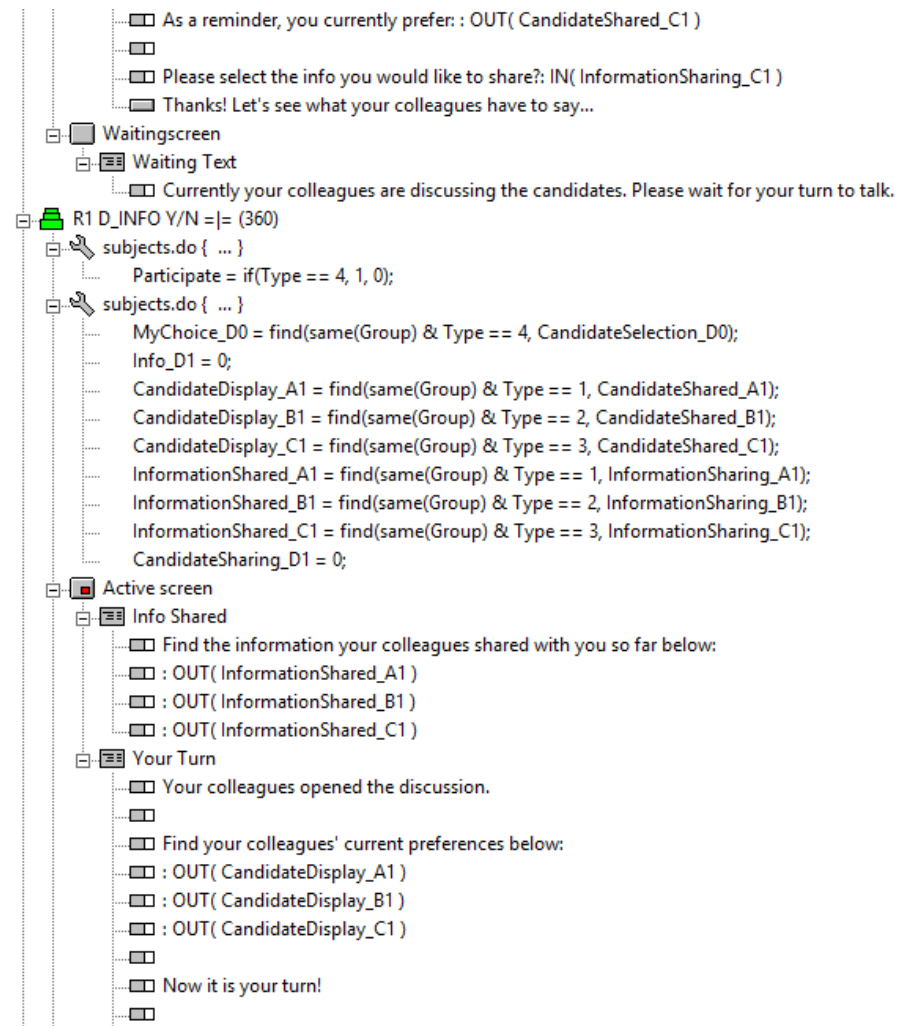
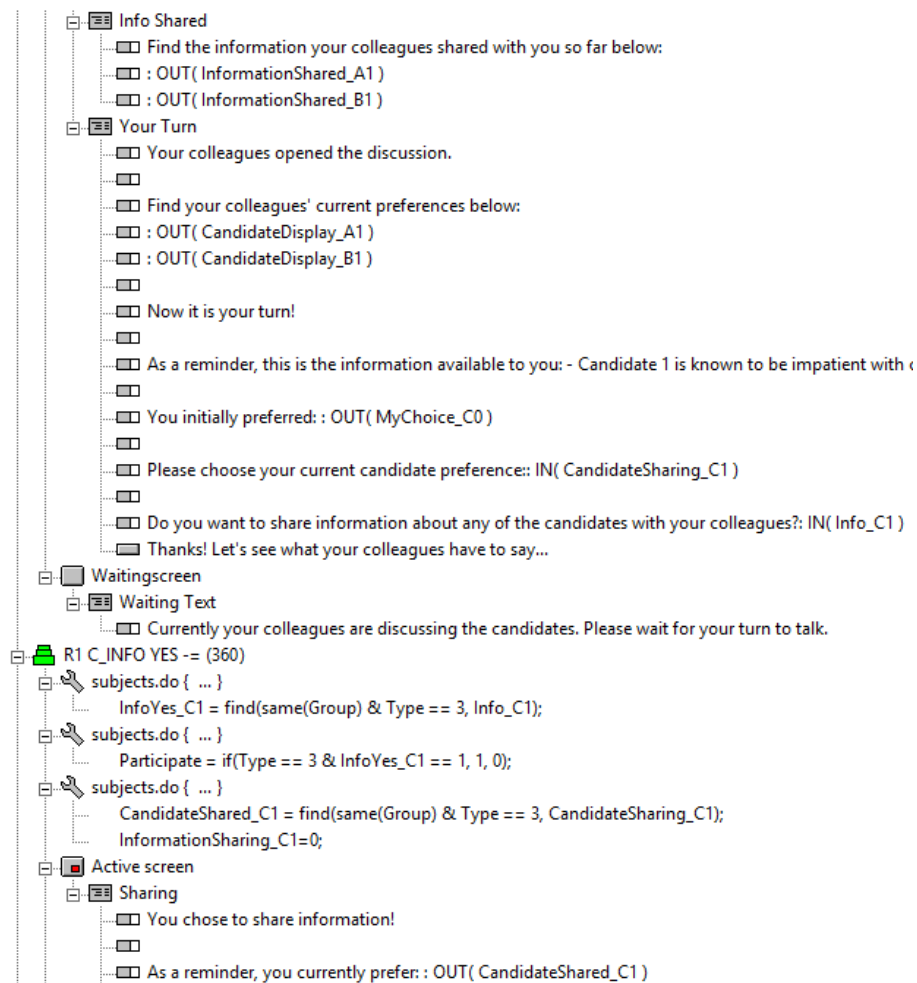
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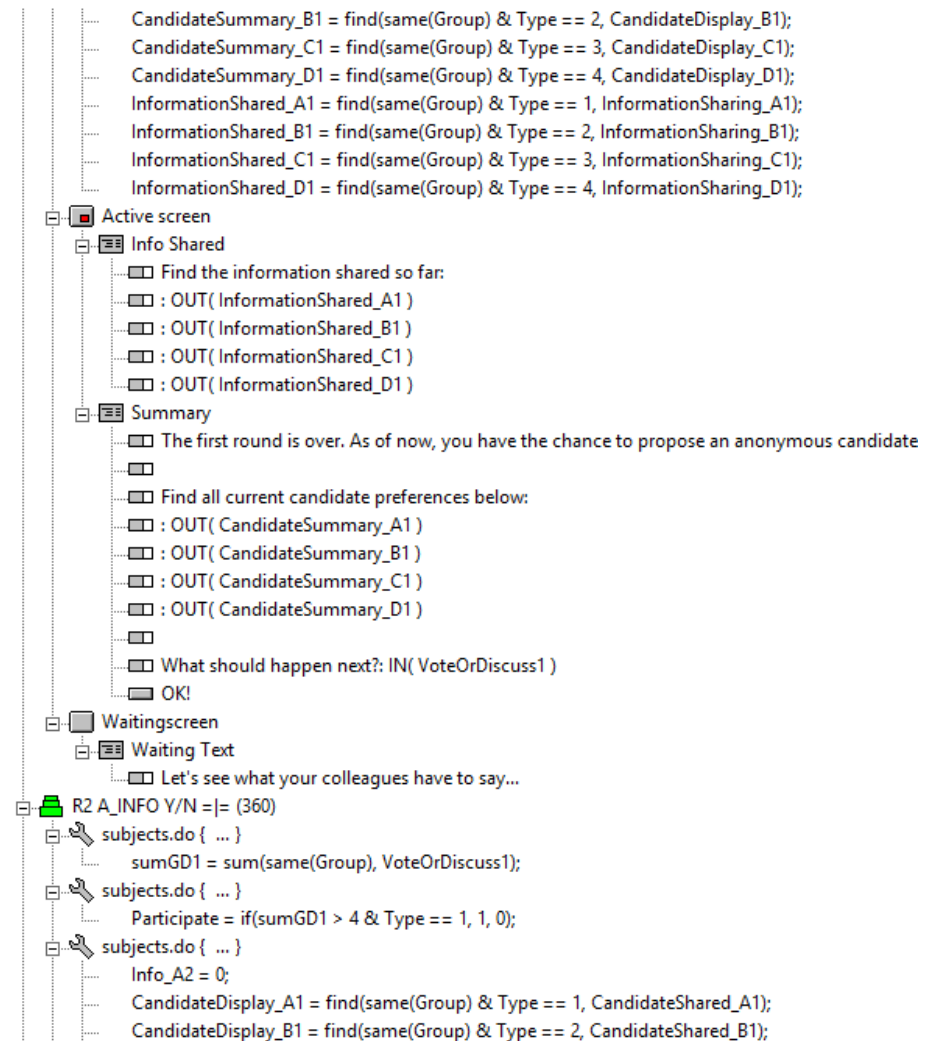
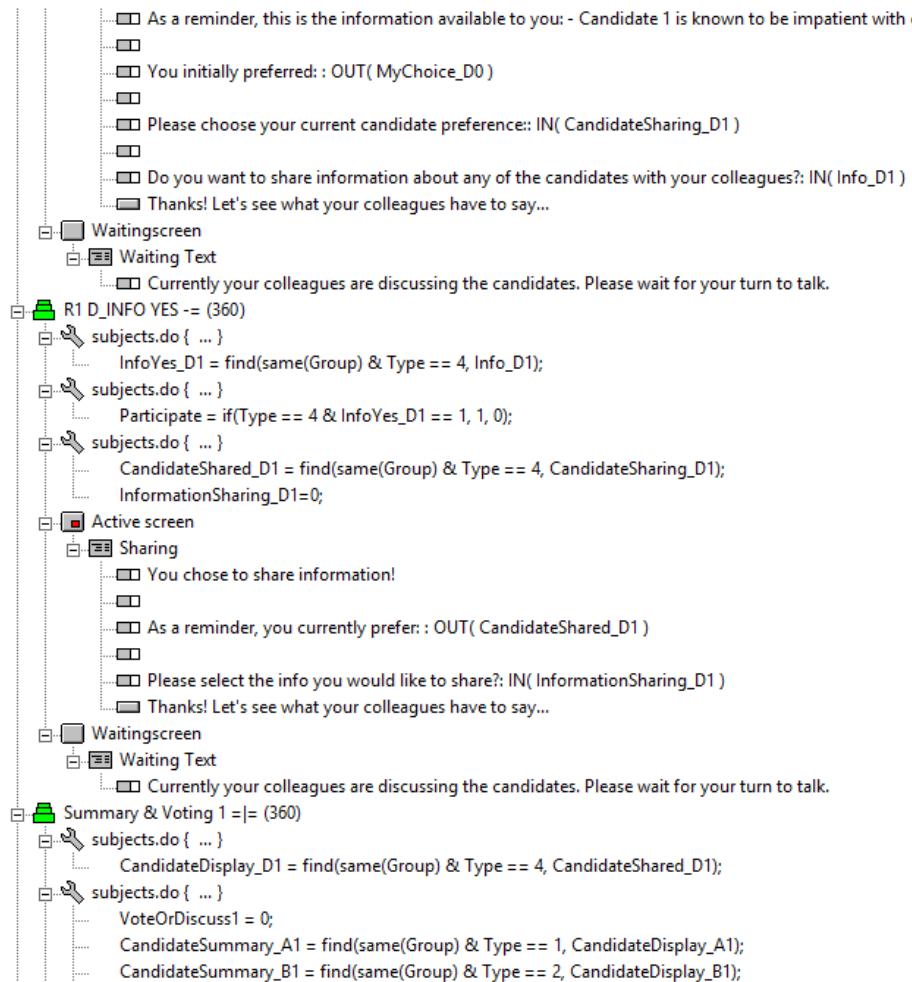


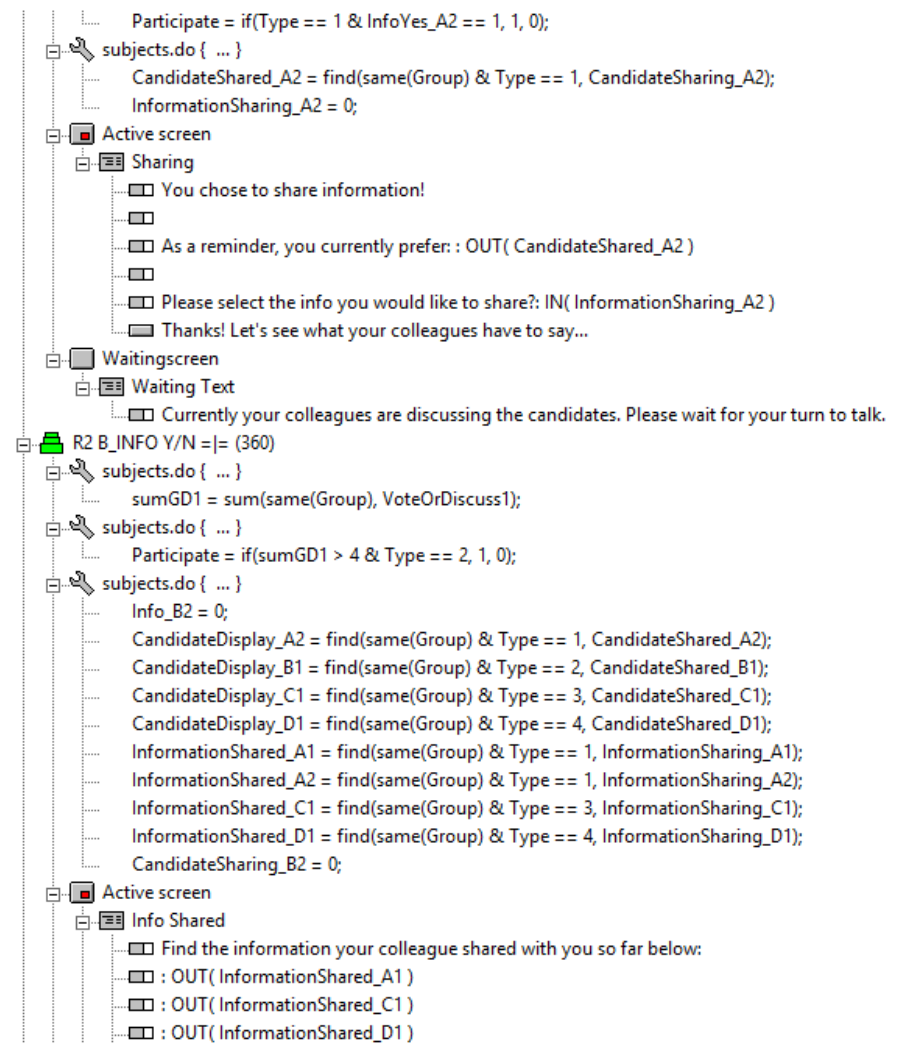


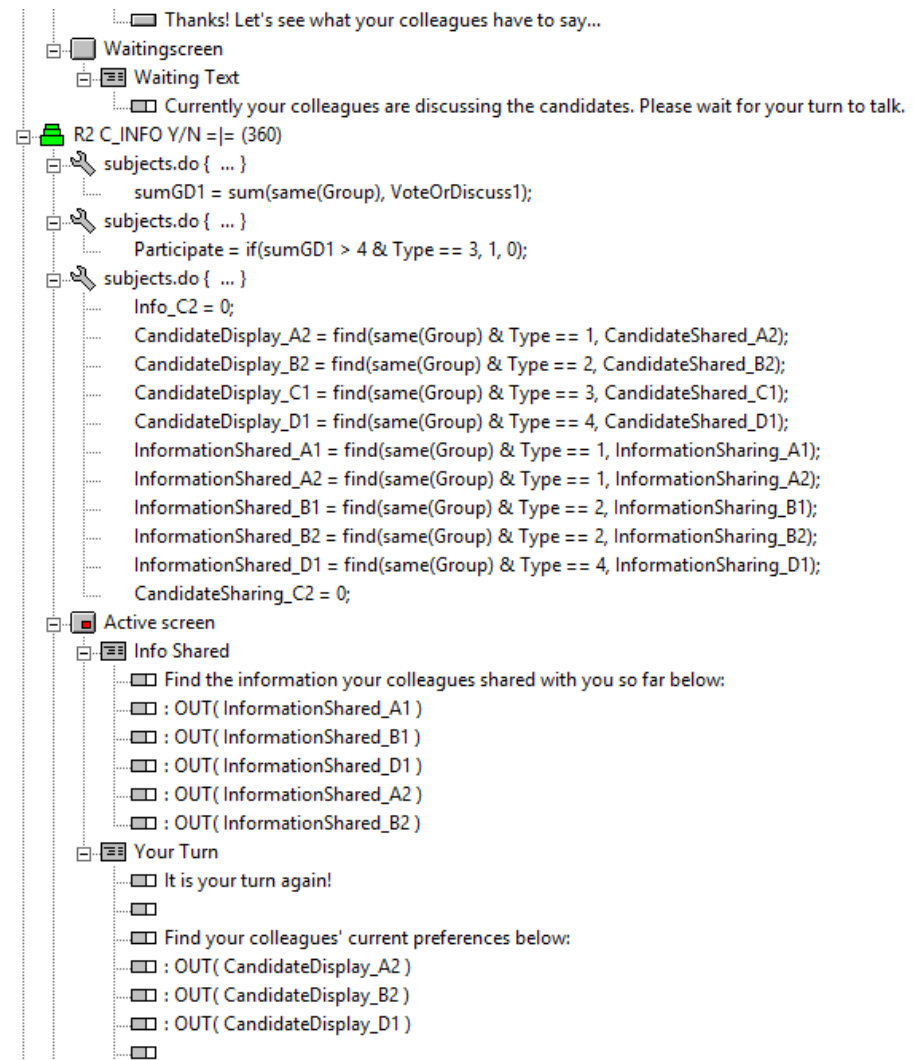
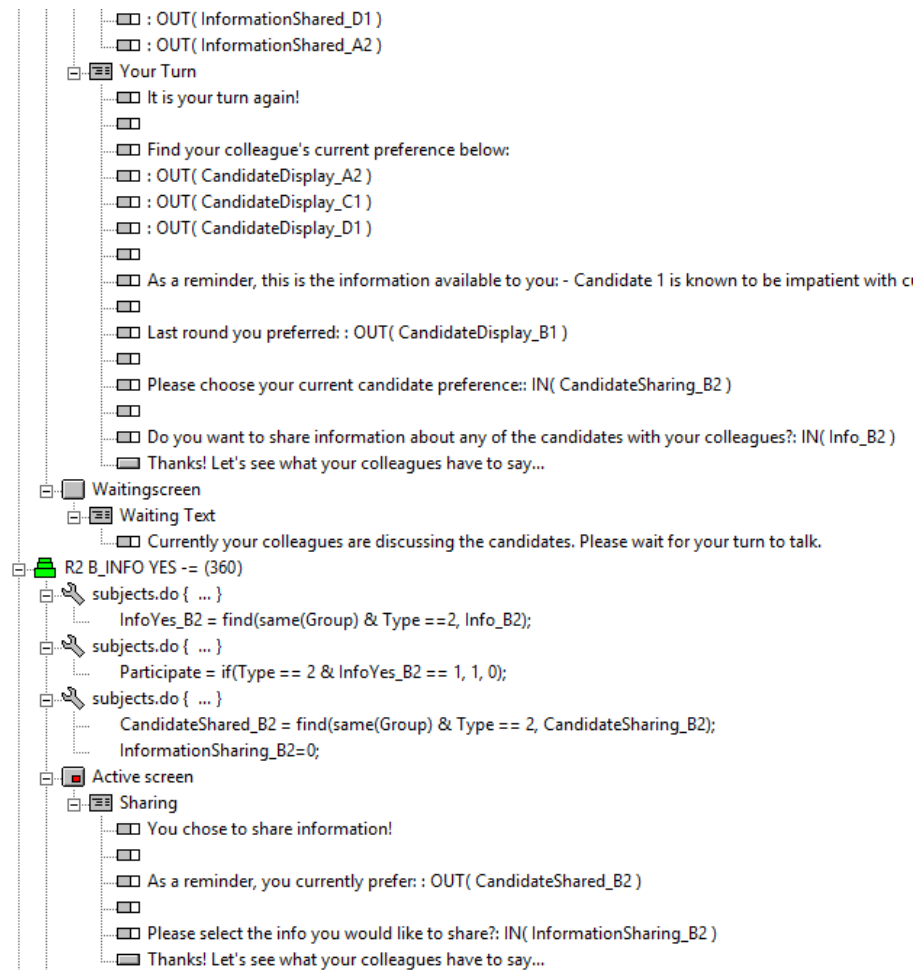


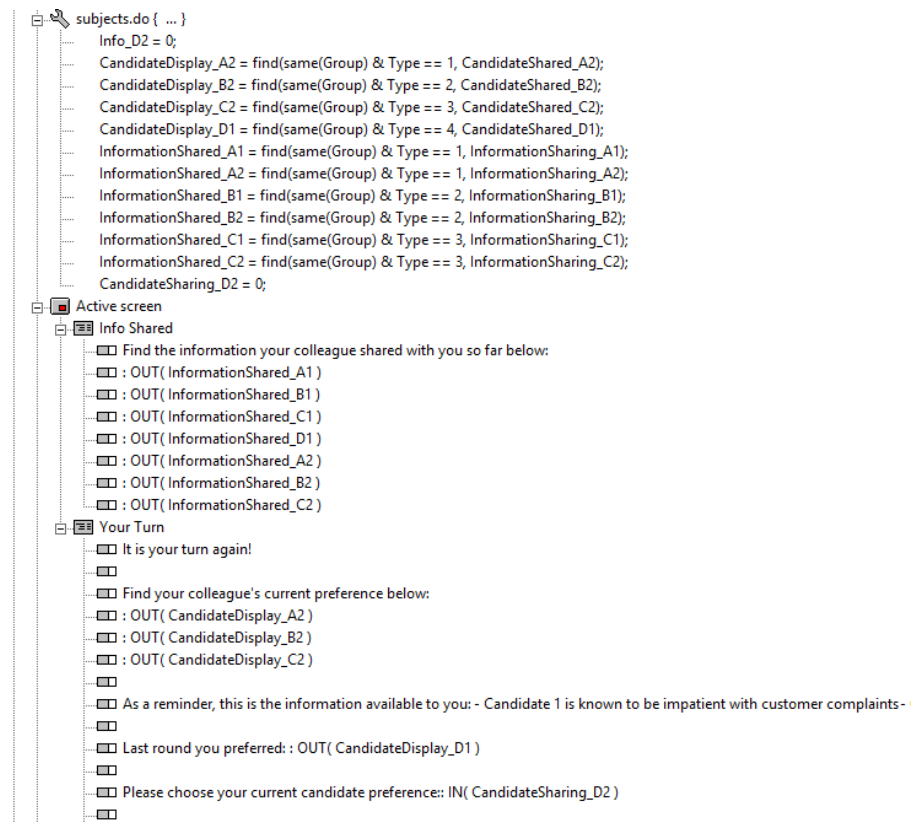
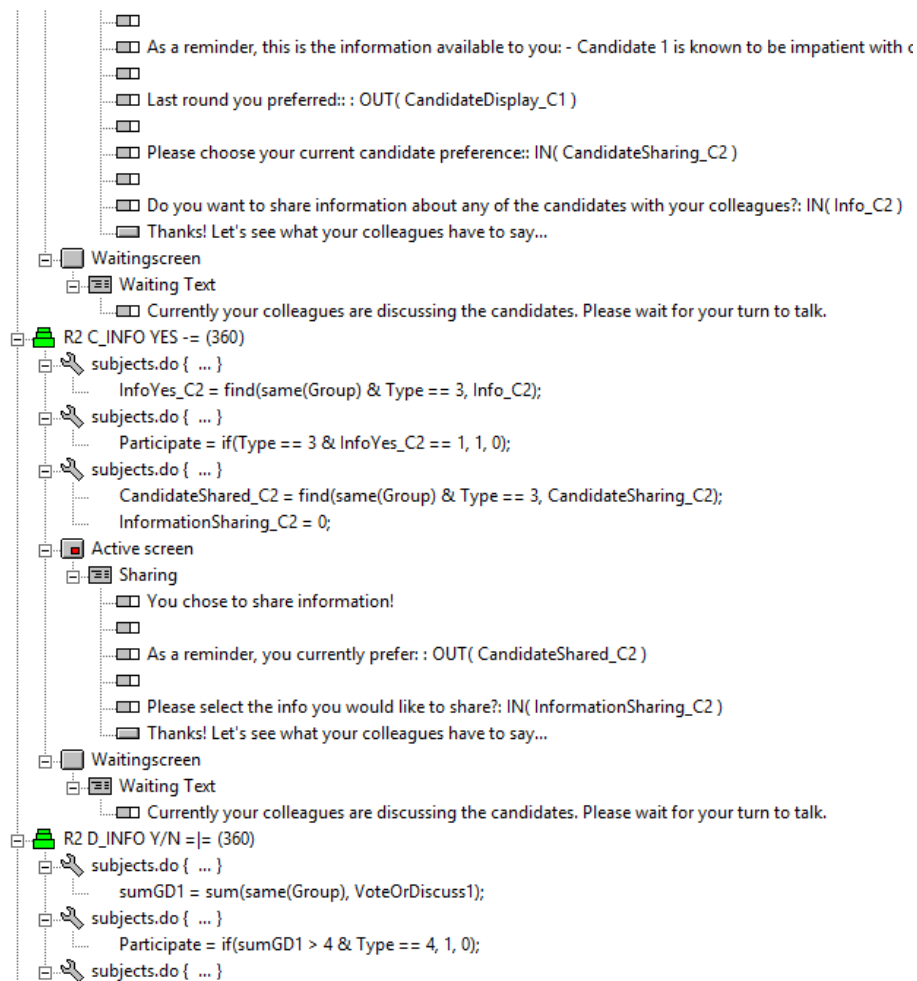




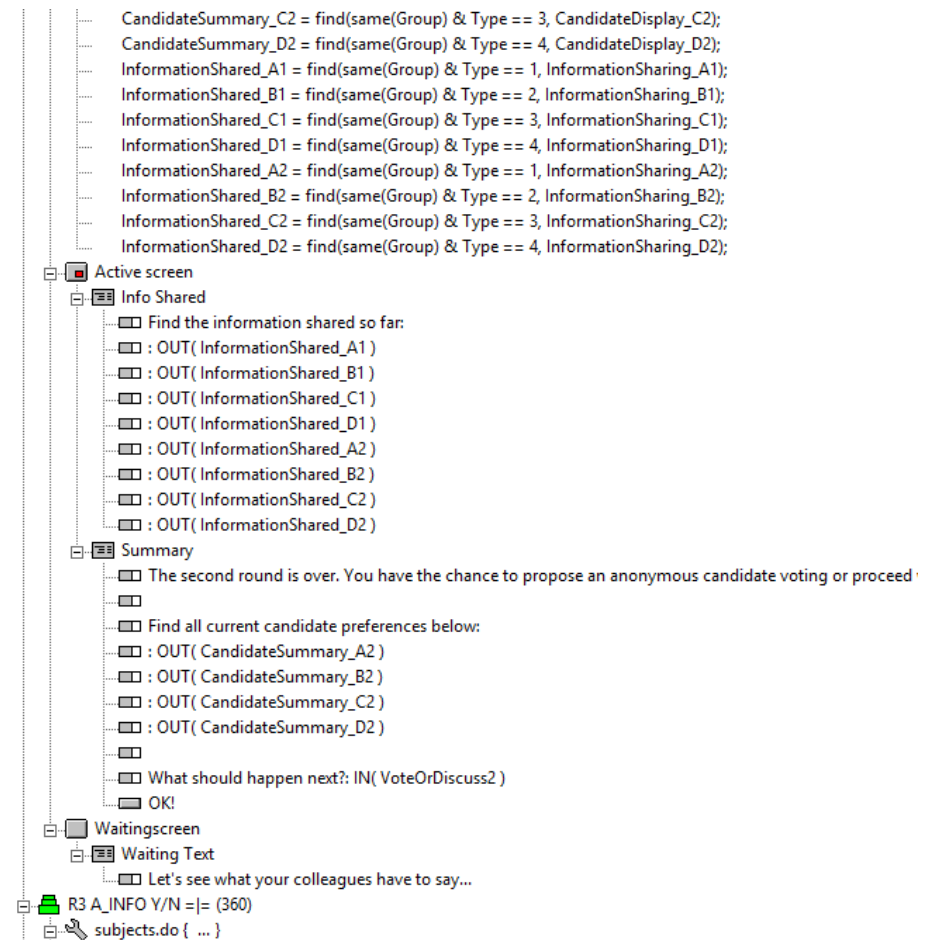
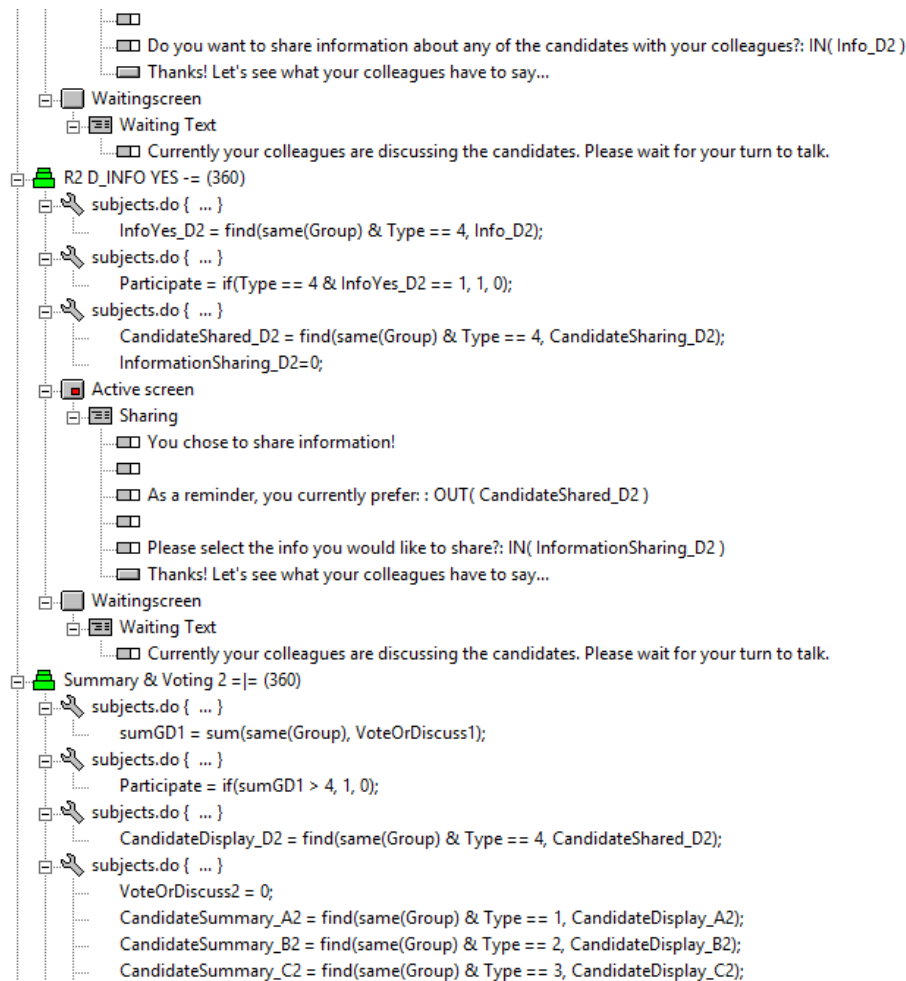












```

subjects.do { ... }
  sumGD2 = sum(same(Group), VoteOrDiscuss2);
subjects.do { ... }
  Participate = if(sumGD2 > 4 & Type == 1, 1, 0);
subjects.do { ... }
  Info_A3 = 0;
  CandidateDisplay_A2 = find(same(Group) & Type == 1, CandidateShared_A2);
  CandidateDisplay_B2 = find(same(Group) & Type == 2, CandidateShared_B2);
  CandidateDisplay_C2 = find(same(Group) & Type == 3, CandidateShared_C2);
  CandidateDisplay_D2 = find(same(Group) & Type == 4, CandidateShared_D1);
  InformationShared_B1 = find(same(Group) & Type == 2, InformationSharing_B1);
  InformationShared_C1 = find(same(Group) & Type == 3, InformationSharing_C1);
  InformationShared_D1 = find(same(Group) & Type == 4, InformationSharing_D1);
  InformationShared_B2 = find(same(Group) & Type == 2, InformationSharing_B2);
  InformationShared_C2 = find(same(Group) & Type == 3, InformationSharing_C2);
  InformationShared_D2 = find(same(Group) & Type == 4, InformationSharing_D2);
  CandidateSharing_A3 = 0;

Active screen
  Info Shared
    Find the information your colleagues shared with you so far below:
    : OUT( InformationShared_B1 )
    : OUT( InformationShared_C1 )
    : OUT( InformationShared_D1 )
    : OUT( InformationShared_B2 )
    : OUT( InformationShared_C2 )
    : OUT( InformationShared_D2 )
  Your Turn
    It is your turn again!
    Find your colleagues' current preferences below:
    : OUT( CandidateDisplay_B2 )
    : OUT( CandidateDisplay_C2 )
    : OUT( CandidateDisplay_D2 )
    As a reminder, this is the information available to you: - Candidate 1 has experience with managing budgets-
    Last round you preferred:: : OUT( CandidateDisplay_A2 )

```

```

Last round you preferred:: : OUT( CandidateDisplay_A2 )
Please choose your current candidate preference:: IN( CandidateSharing_A3 )
Do you want to share information about any of the candidates with your colleagues?: IN( Info_A3 )
Thanks! Let's see what your colleagues have to say...

Waitingscreen
  Waiting Text
    Currently your colleagues are discussing the candidates. Please wait for your turn to talk.

R3 A_INFO YES -> (360)
  subjects.do { ... }
    InfoYes_A3 = find(same(Group) & Type == 1, Info_A3);
  subjects.do { ... }
    Participate = if(Type == 1 & InfoYes_A3 == 1, 1, 0);
  subjects.do { ... }
    CandidateShared_A3 = find(same(Group) & Type == 1, CandidateSharing_A3);
    InformationSharing_A3 = 0;

Active screen
  Sharing
    You chose to share information!
    As a reminder, you currently prefer: : OUT( CandidateShared_A3 )
    Please select the info you would like to share?: IN( InformationSharing_A3 )
    Thanks! Let's see what your colleagues have to say...

Waitingscreen
  Waiting Text
    Currently your colleagues are discussing the candidates. Please wait for your turn to talk.

R3 B_INFO Y/N => (360)
  subjects.do { ... }
    sumGD2 = sum(same(Group), VoteOrDiscuss2);
  subjects.do { ... }
    Participate = if(sumGD2 > 4 & Type == 2, 1, 0);
  subjects.do { ... }
    Info_B3 = 0;
    CandidateDisplay_A3 = find(same(Group) & Type == 1, CandidateShared_A3);
    CandidateDisplay_B2 = find(same(Group) & Type == 2, CandidateShared_B2);

```



```

CandidateDisplay_B2 = find(same(Group) & Type == 2, CandidateShared_B2);
CandidateDisplay_C2 = find(same(Group) & Type == 3, CandidateShared_C2);
CandidateDisplay_D2 = find(same(Group) & Type == 4, CandidateShared_D2);
InformationShared_A1 = find(same(Group) & Type == 1, InformationSharing_A1);
InformationShared_C1 = find(same(Group) & Type == 3, InformationSharing_C1);
InformationShared_D1 = find(same(Group) & Type == 4, InformationSharing_D1);
InformationShared_A2 = find(same(Group) & Type == 1, InformationSharing_A2);
InformationShared_C2 = find(same(Group) & Type == 3, InformationSharing_C2);
InformationShared_D2 = find(same(Group) & Type == 4, InformationSharing_D2);
InformationShared_A3 = find(same(Group) & Type == 1, InformationSharing_A3);
CandidateSharing_B3 = 0;

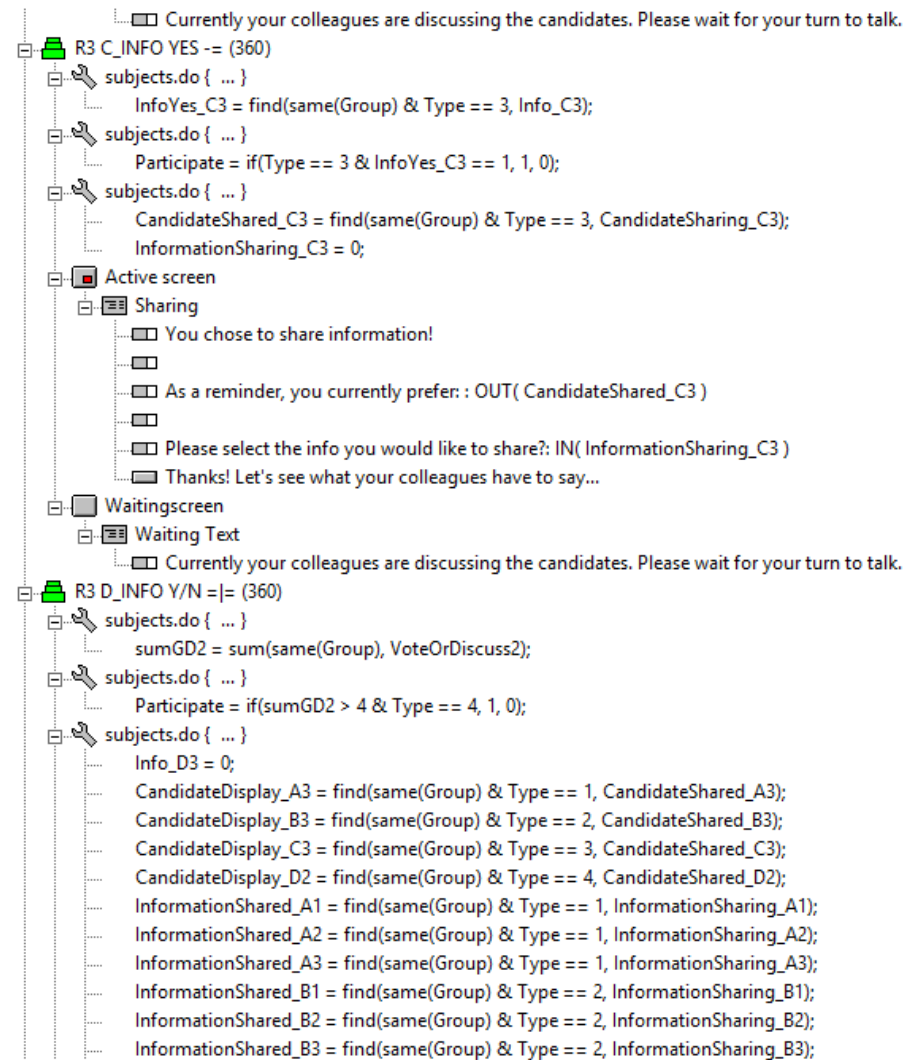
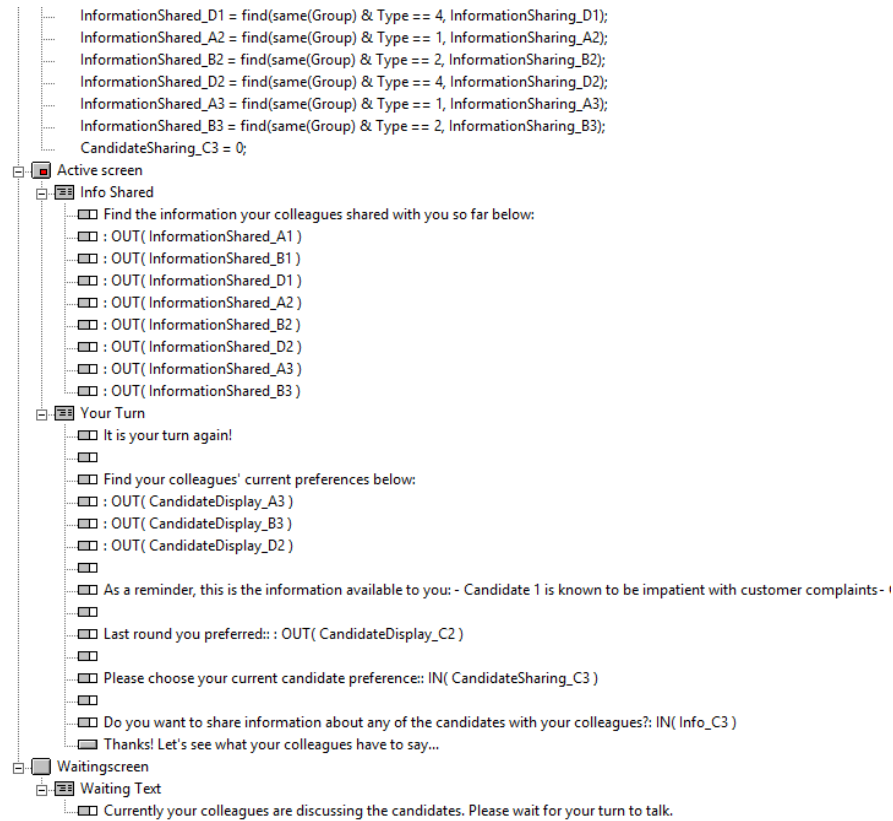
Active screen
  Info Shared
    Find the information your colleague shared with you so far below:
    OUT( InformationShared_A1 )
    OUT( InformationShared_C1 )
    OUT( InformationShared_D1 )
    OUT( InformationShared_A2 )
    OUT( InformationShared_C2 )
    OUT( InformationShared_D2 )
    OUT( InformationShared_A3 )
  Your Turn
    It is your turn again!
    Find your colleague's current preference below:
    OUT( CandidateDisplay_A3 )
    OUT( CandidateDisplay_C2 )
    OUT( CandidateDisplay_D2 )
    As a reminder, this is the information available to you: - Candidate 1 is known to be impatient with customer complaints-
    Last round you preferred: : OUT( CandidateDisplay_B2 )
    Please choose your current candidate preference:: IN( CandidateSharing_B3 )
    Do you want to share information about any of the candidates with your colleagues?: IN( Info_B3 )
    Thanks! Let's see what your colleagues have to say...

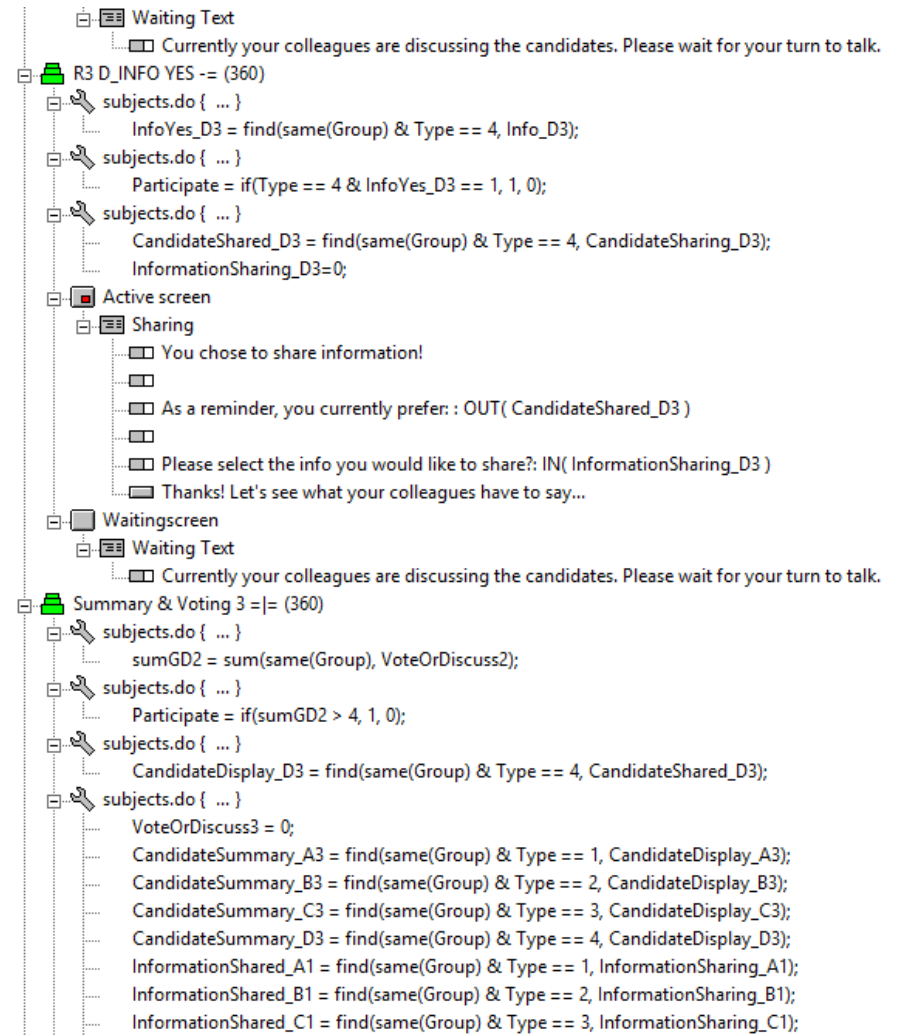
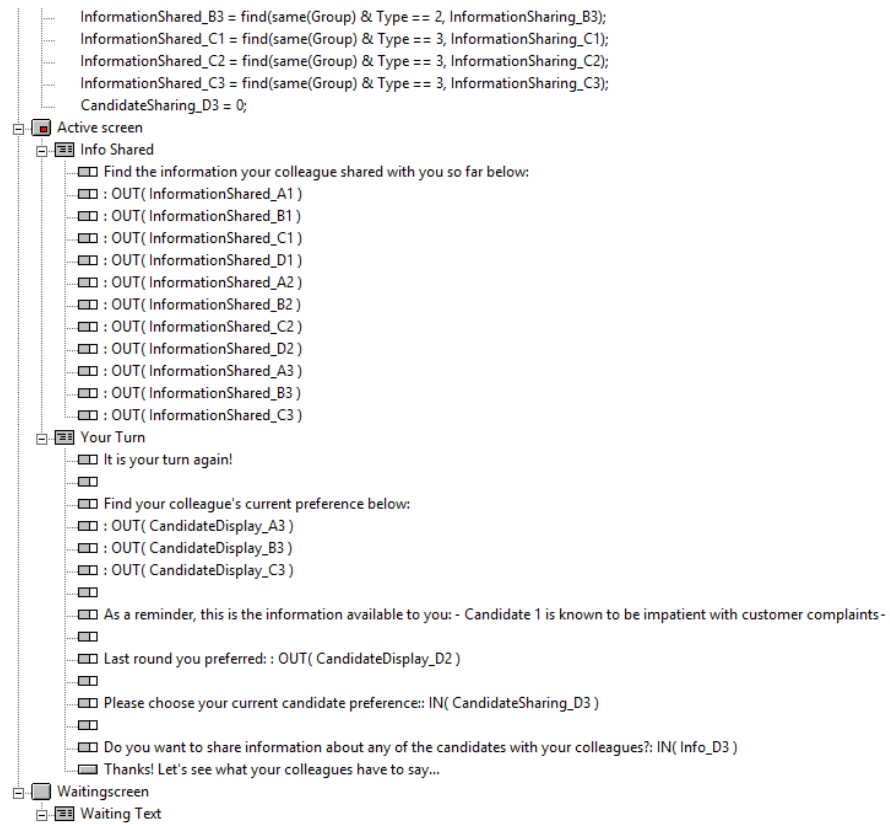
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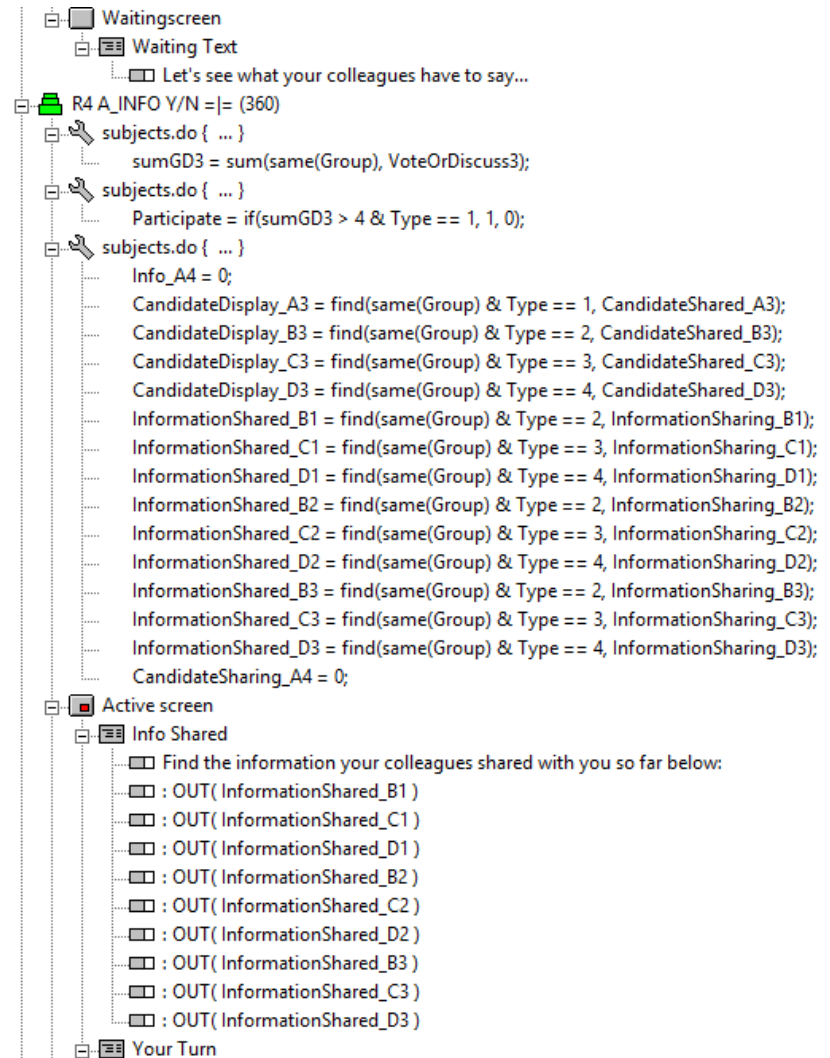
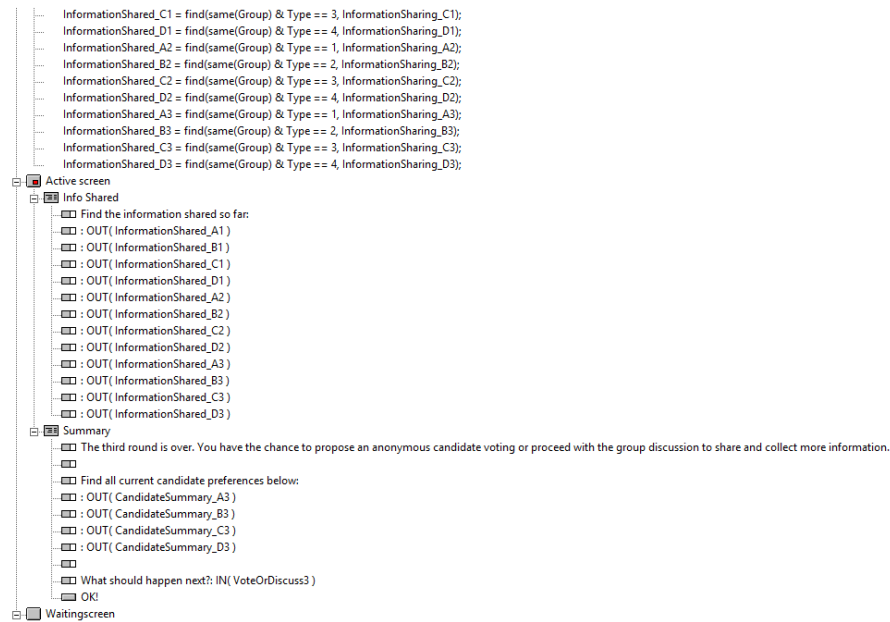
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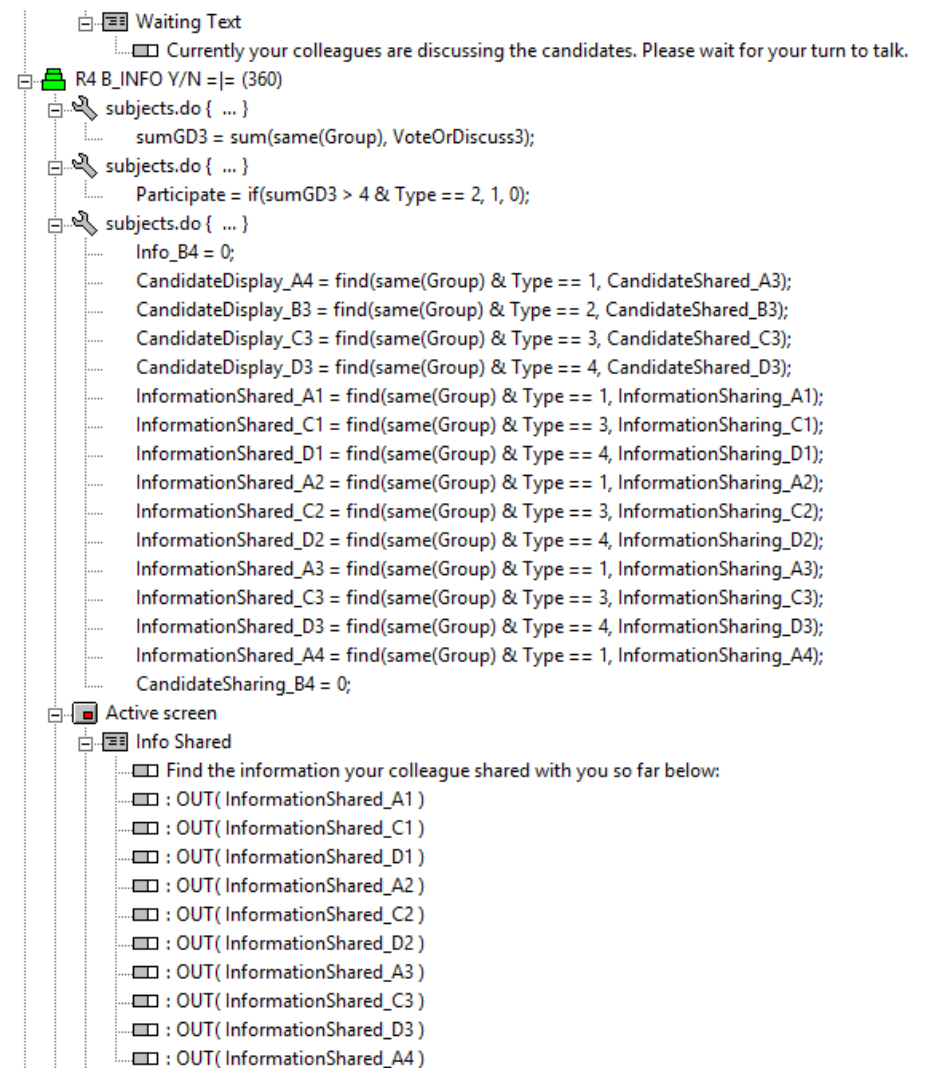
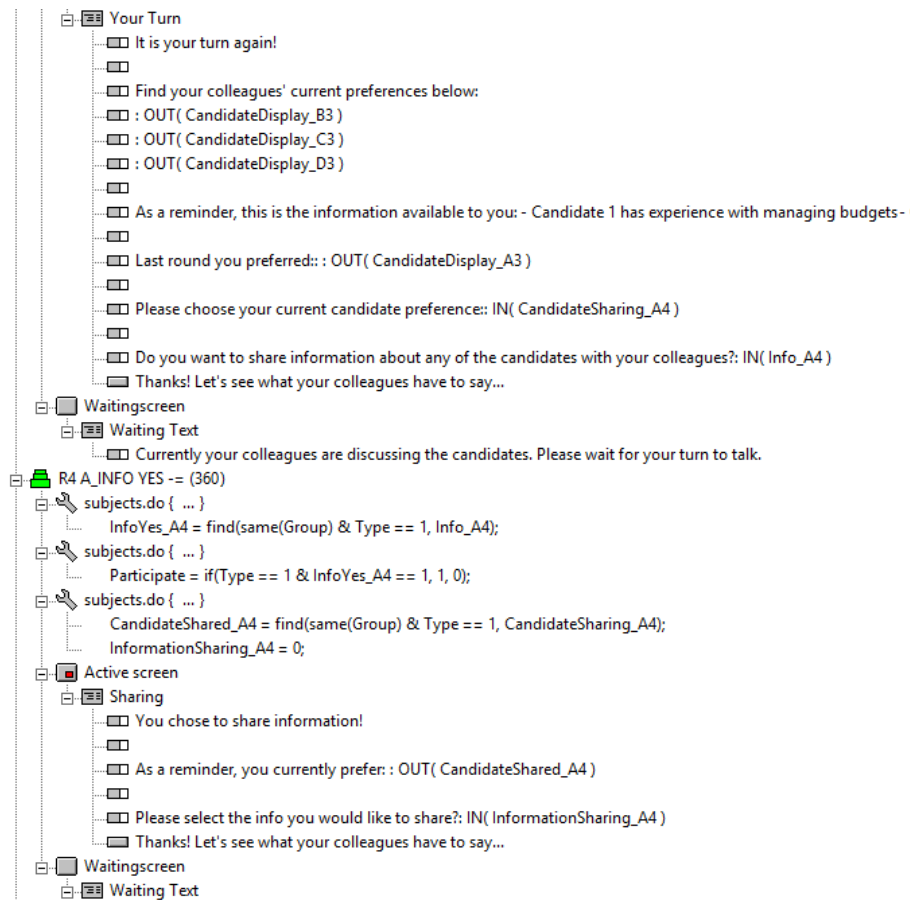
Thanks! Let's see what your colleagues have to say...
Waitingscreen
  Waiting Text
    Currently your colleagues are discussing the candidates. Please wait for your turn to talk.
R3 B_INFO YES -= (360)
  subjects.do { ... }
    InfoYes_B3 = find(same(Group) & Type == 2, Info_B3);
  subjects.do { ... }
    Participate = if(Type == 2 & InfoYes_B3 == 1, 1, 0);
  subjects.do { ... }
    CandidateShared_B3 = find(same(Group) & Type == 2, CandidateSharing_B3);
    InformationSharing_B3=0;
Active screen
  Sharing
    You chose to share information!
    As a reminder, you currently prefer: : OUT( CandidateShared_B3 )
    Please select the info you would like to share?: IN( InformationSharing_B3 )
    Thanks! Let's see what your colleagues have to say...
Waitingscreen
  Waiting Text
    Currently your colleagues are discussing the candidates. Please wait for your turn to talk.
R3 C_INFO Y/N != (360)
  subjects.do { ... }
    sumGD2 = sum(same(Group), VoteOrDiscuss2);
  subjects.do { ... }
    Participate = if(sumGD2 > 4 & Type == 3, 1, 0);
  subjects.do { ... }
    Info_C3 = 0;
    CandidateDisplay_A3 = find(same(Group) & Type == 1, CandidateShared_A3);
    CandidateDisplay_B3 = find(same(Group) & Type == 2, CandidateShared_B3);
    CandidateDisplay_C2 = find(same(Group) & Type == 3, CandidateShared_C2);
    CandidateDisplay_D2 = find(same(Group) & Type == 4, CandidateShared_D2);
    InformationShared_A1 = find(same(Group) & Type == 1, InformationSharing_A1);
    InformationShared_B1 = find(same(Group) & Type == 2, InformationSharing_B1);
    InformationShared_D1 = find(same(Group) & Type == 4, InformationSharing_D1);

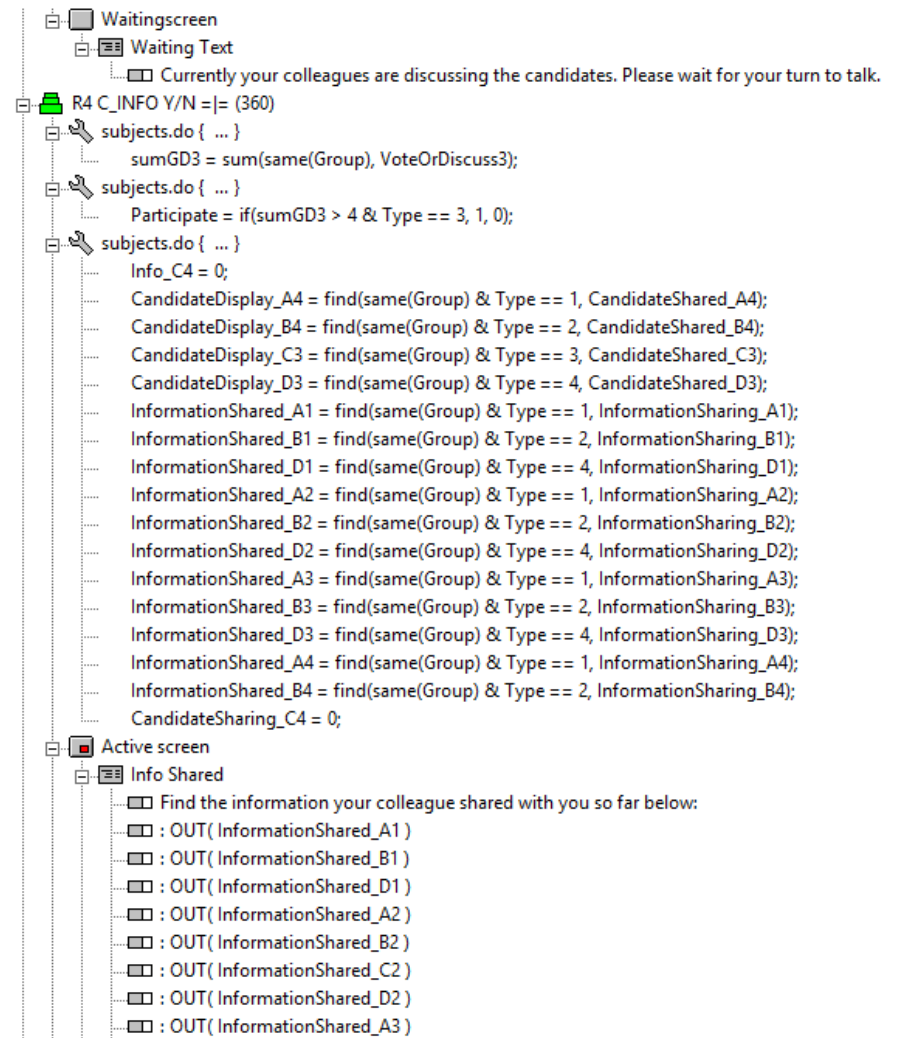
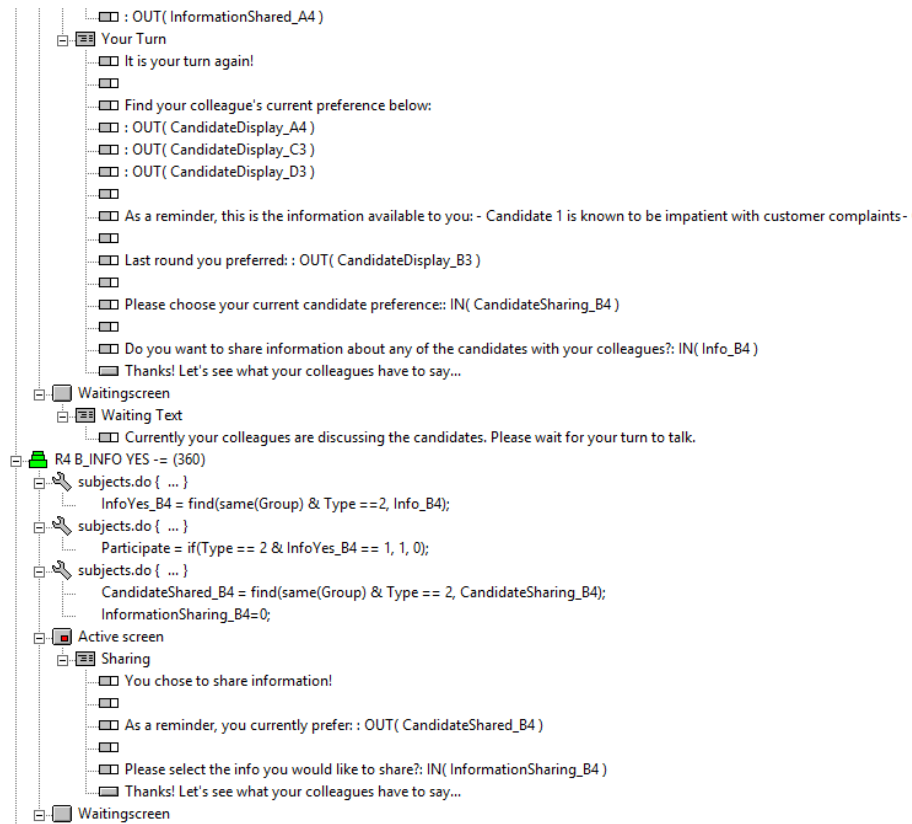
```













- OUT( InformationShared\_A3 )
- OUT( InformationShared\_B3 )
- OUT( InformationShared\_D3 )
- OUT( InformationShared\_A4 )
- OUT( InformationShared\_B4 )
- Your Turn
    - It is your turn again!
    - Find your colleagues' current preferences below:
      - OUT( CandidateDisplay\_A4 )
      - OUT( CandidateDisplay\_B4 )
      - OUT( CandidateDisplay\_D3 )
    - As a reminder, this is the information available to you: - Candidate 1 is known to be impatient with customer complaints -
    - Last round you preferred:: OUT( CandidateDisplay\_C3 )
    - Please choose your current candidate preference:: IN( CandidateSharing\_C4 )
    - Do you want to share information about any of the candidates with your colleagues?: IN( Info\_C4 )
    - Thanks! Let's see what your colleagues have to say...
- Waitingscreen
  - Waiting Text
    - Currently your colleagues are discussing the candidates. Please wait for your turn to talk.
- R4 C\_INFO YES == (360)
  - subjects.do { ... }
    - InfoYes\_C4 = find(same(Group) & Type == 3, Info\_C4);
  - subjects.do { ... }
    - Participate = if(Type == 3 & InfoYes\_C4 == 1, 1, 0);
  - subjects.do { ... }
    - CandidateShared\_C4 = find(same(Group) & Type == 3, CandidateSharing\_C4);
    - InformationSharing\_C4 = 0;
- Active screen
  - Info Shared
    - Find the information your colleagues shared with you so far below:
      - OUT( InformationShared\_A1 )
      - OUT( InformationShared\_B1 )

- OUT( InformationShared\_B1 )
- OUT( InformationShared\_C1 )
- OUT( InformationShared\_A2 )
- OUT( InformationShared\_B2 )
- OUT( InformationShared\_C2 )
- OUT( InformationShared\_A3 )
- OUT( InformationShared\_B3 )
- OUT( InformationShared\_C3 )
- OUT( InformationShared\_A4 )
- OUT( InformationShared\_B4 )
- Sharing
    - You chose to share information!
    - As a reminder, you currently prefer: : OUT( CandidateShared\_C4 )
    - Please select the info you would like to share?: IN( InformationSharing\_C4 )
    - Thanks! Let's see what your colleagues have to say...
- Waitingscreen
  - Waiting Text
    - Currently your colleagues are discussing the candidates. Please wait for your turn to talk.
- R4 D\_INFO Y/N != (360)
  - subjects.do { ... }
    - sumGD3 = sum(same(Group), VoteOrDiscuss3);
  - subjects.do { ... }
    - Participate = if(sumGD3 > 4 & Type == 4, 1, 0);
  - subjects.do { ... }
    - Info\_D4 = 0;
    - CandidateDisplay\_A4 = find(same(Group) & Type == 1, CandidateShared\_A4);
    - CandidateDisplay\_B4 = find(same(Group) & Type == 2, CandidateShared\_B4);
    - CandidateDisplay\_C4 = find(same(Group) & Type == 3, CandidateShared\_C4);
    - CandidateDisplay\_D3 = find(same(Group) & Type == 4, CandidateShared\_D3);
    - InformationShared\_A1 = find(same(Group) & Type == 1, InformationSharing\_A1);
    - InformationShared\_A2 = find(same(Group) & Type == 1, InformationSharing\_A2);
    - InformationShared\_A3 = find(same(Group) & Type == 1, InformationSharing\_A3);
    - InformationShared\_A4 = find(same(Group) & Type == 1, InformationSharing\_A4);
    - InformationShared\_B1 = find(same(Group) & Type == 2, InformationSharing\_B1);
    - InformationShared\_B2 = find(same(Group) & Type == 2, InformationSharing\_B2);

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InformationShared_B2 = find(same(Group) & Type == 2, InformationSharing_B2);
InformationShared_B3 = find(same(Group) & Type == 2, InformationSharing_B3);
InformationShared_B4 = find(same(Group) & Type == 2, InformationSharing_B4);
InformationShared_C1 = find(same(Group) & Type == 3, InformationSharing_C1);
InformationShared_C2 = find(same(Group) & Type == 3, InformationSharing_C2);
InformationShared_C3 = find(same(Group) & Type == 3, InformationSharing_C3);
InformationShared_C4 = find(same(Group) & Type == 3, InformationSharing_C4);
CandidateSharing_D4 = 0;

Active screen
  Info Shared
    Find the information your colleague shared with you so far below:
    : OUT( InformationShared_A1 )
    : OUT( InformationShared_B1 )
    : OUT( InformationShared_C1 )
    : OUT( InformationShared_D1 )
    : OUT( InformationShared_A2 )
    : OUT( InformationShared_B2 )
    : OUT( InformationShared_C2 )
    : OUT( InformationShared_D2 )
    : OUT( InformationShared_A3 )
    : OUT( InformationShared_B3 )
    : OUT( InformationShared_C3 )
    : OUT( InformationShared_D3 )
    : OUT( InformationShared_A4 )
    : OUT( InformationShared_B4 )
    : OUT( InformationShared_C4 )
  Your Turn
    It is your turn again!
    Find your colleague's current preference below:
    : OUT( CandidateDisplay_A4 )
    : OUT( CandidateDisplay_B4 )
    : OUT( CandidateDisplay_C4 )
    As a reminder, this is the information available to you: - Candidate 1 is known to be impatient with customer complaints-
    Last round you preferred: : OUT( CandidateDisplay_D3 )

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Last round you preferred: : OUT( CandidateDisplay_D3 )
Please choose your current candidate preference:: IN( CandidateSharing_D4 )
Do you want to share information about any of the candidates with your colleagues?: IN( Info_D4 )
Thanks! Let's see what your colleagues have to say...

Waitingscreen
  Waiting Text
    Currently your colleagues are discussing the candidates. Please wait for your turn to talk.

R4 D_INFO YES -= (360)
  subjects.do { ... }
    InfoYes_D4= find(same(Group) & Type == 4, Info_D4);
  subjects.do { ... }
    Participate = if(Type == 4 & InfoYes_D4 == 1, 1, 0);
  subjects.do { ... }
    CandidateShared_D4 = find(same(Group) & Type == 4, CandidateSharing_D4);
    InformationSharing_D4=0;

Active screen
  Sharing
    You chose to share information!
    As a reminder, you currently prefer: : OUT( CandidateShared_D4 )
    Please select the info you would like to share?: IN( InformationSharing_D4 )
    Thanks! Let's see what your colleagues have to say...

Waitingscreen
  Waiting Text
    Currently your colleagues are discussing the candidates. Please wait for your turn to talk.

Summary & Voting 4 =|= (360)
  subjects.do { ... }
    sumGD3 = sum(same(Group), VoteOrDiscuss3);
  subjects.do { ... }
    Participate = if(sumGD3 > 4, 1, 0);
  subjects.do { ... }
    CandidateDisplay_D4 = find(same(Group) & Type == 4, CandidateShared_D4);
  subjects.do { ... }
    VoteOrDiscuss4 = 0;

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VoteOrDiscuss4 = 0;
CandidateSummary_A4 = find(same(Group) & Type == 1, CandidateDisplay_A4);
CandidateSummary_B4 = find(same(Group) & Type == 2, CandidateDisplay_B4);
CandidateSummary_C4 = find(same(Group) & Type == 3, CandidateDisplay_C4);
CandidateSummary_D4 = find(same(Group) & Type == 4, CandidateDisplay_D4);
InformationShared_A1 = find(same(Group) & Type == 1, InformationSharing_A1);
InformationShared_B1 = find(same(Group) & Type == 2, InformationSharing_B1);
InformationShared_C1 = find(same(Group) & Type == 3, InformationSharing_C1);
InformationShared_D1 = find(same(Group) & Type == 4, InformationSharing_D1);
InformationShared_A2 = find(same(Group) & Type == 1, InformationSharing_A2);
InformationShared_B2 = find(same(Group) & Type == 2, InformationSharing_B2);
InformationShared_C2 = find(same(Group) & Type == 3, InformationSharing_C2);
InformationShared_D2 = find(same(Group) & Type == 4, InformationSharing_D2);
InformationShared_A3 = find(same(Group) & Type == 1, InformationSharing_A3);
InformationShared_B3 = find(same(Group) & Type == 2, InformationSharing_B3);
InformationShared_C3 = find(same(Group) & Type == 3, InformationSharing_C3);
InformationShared_D3 = find(same(Group) & Type == 4, InformationSharing_D3);
InformationShared_A4 = find(same(Group) & Type == 1, InformationSharing_A4);
InformationShared_B4 = find(same(Group) & Type == 2, InformationSharing_B4);
InformationShared_C4 = find(same(Group) & Type == 3, InformationSharing_C4);
InformationShared_D4 = find(same(Group) & Type == 4, InformationSharing_D4);

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#### Active screen

##### Info Shared

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Find the information shared so far:
OUT( InformationShared_A1 )
OUT( InformationShared_B1 )
OUT( InformationShared_C1 )
OUT( InformationShared_D1 )
OUT( InformationShared_A2 )
OUT( InformationShared_B2 )
OUT( InformationShared_C2 )
OUT( InformationShared_D2 )
OUT( InformationShared_A3 )
OUT( InformationShared_B3 )
OUT( InformationShared_C3 )
OUT( InformationShared_D3 )
OUT( InformationShared_A4 )

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OUT( InformationShared_A4 )
OUT( InformationShared_B4 )
OUT( InformationShared_C4 )
OUT( InformationShared_D4 )
Summary
The fourth round is over. You have the chance to propose an anonymous candidate voting or proce
Find all current candidate preferences below:
OUT( CandidateSummary_A4 )
OUT( CandidateSummary_B4 )
OUT( CandidateSummary_C4 )
OUT( CandidateSummary_D4 )
What should happen next?: IN( VoteOrDiscuss4 )
OK!
WaitingScreen
Waiting Text
Let's see what your colleagues have to say...
R5 A_INFO Y/N = (360)
subjects.do { ... }
    sumGD3 = sum(same(Group), VoteOrDiscuss3);
subjects.do { ... }
    Participate = if(sumGD3 > 4 & Type == 1, 1, 0);
subjects.do { ... }
    Info_A5 = 0;
    CandidateDisplay_A4 = find(same(Group) & Type == 1, CandidateShared_A4);
    CandidateDisplay_B4 = find(same(Group) & Type == 2, CandidateShared_B4);
    CandidateDisplay_C4 = find(same(Group) & Type == 3, CandidateShared_C4);
    CandidateDisplay_D4 = find(same(Group) & Type == 4, CandidateShared_D4);
    InformationShared_B1 = find(same(Group) & Type == 2, InformationSharing_B1);
    InformationShared_C1 = find(same(Group) & Type == 3, InformationSharing_C1);
    InformationShared_D1 = find(same(Group) & Type == 4, InformationSharing_D1);
    InformationShared_B2 = find(same(Group) & Type == 2, InformationSharing_B2);
    InformationShared_C2 = find(same(Group) & Type == 3, InformationSharing_C2);
    InformationShared_D2 = find(same(Group) & Type == 4, InformationSharing_D2);
    InformationShared_B3 = find(same(Group) & Type == 2, InformationSharing_B3);
    InformationShared_C3 = find(same(Group) & Type == 3, InformationSharing_C3);

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InformationShared_C3 = find(same(Group) & Type == 3, InformationSharing_C3);
InformationShared_D3 = find(same(Group) & Type == 4, InformationSharing_D3);
InformationShared_B4 = find(same(Group) & Type == 2, InformationSharing_B4);
InformationShared_C4 = find(same(Group) & Type == 3, InformationSharing_C4);
InformationShared_D4 = find(same(Group) & Type == 4, InformationSharing_D4);
CandidateSharing_A5 = 0;

Active screen
  Info Shared
    Find the information your colleagues shared with you so far below:
    : OUT( InformationShared_B1 )
    : OUT( InformationShared_C1 )
    : OUT( InformationShared_D1 )
    : OUT( InformationShared_B2 )
    : OUT( InformationShared_C2 )
    : OUT( InformationShared_D2 )
    : OUT( InformationShared_B3 )
    : OUT( InformationShared_C3 )
    : OUT( InformationShared_D3 )
    : OUT( InformationShared_B4 )
    : OUT( InformationShared_C4 )
    : OUT( InformationShared_D4 )
  Your Turn
    It is your turn again!
    Find your colleagues' current preferences below:
    : OUT( CandidateDisplay_B4 )
    : OUT( CandidateDisplay_C4 )
    : OUT( CandidateDisplay_D4 )
    As a reminder, this is the information available to you: - Candidate 1 has experience with managing budgets -
    Last round you preferred:: : OUT( CandidateDisplay_A4 )
    Please choose your current candidate preference:: IN( CandidateSharing_A5 )
    Do you want to share information about any of the candidates with your colleagues?: IN( Info_A5 )
    Thanks! Let's see what your colleagues have to say...

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Thanks! Let's see what your colleagues have to say...
Waitingscreen
  Waiting Text
    Currently your colleagues are discussing the candidates. Please wait for your turn to talk.

R5 A_INFO YES := (360)
  subjects.do { ... }
    InfoYes_A5 = find(same(Group) & Type == 1, Info_A5);
  subjects.do { ... }
    Participate = if(Type == 1 & InfoYes_A5 == 1, 1, 0);
  subjects.do { ... }
    CandidateShared_A5 = find(same(Group) & Type == 1, CandidateSharing_A5);
    InformationSharing_A5 = 0;

Active screen
  Sharing
    You chose to share information!
    As a reminder, you currently prefer: : OUT( CandidateShared_A5 )
    Please select the info you would like to share?: IN( InformationSharing_A5 )
    Thanks! Let's see what your colleagues have to say...

Waitingscreen
  Waiting Text
    Currently your colleagues are discussing the candidates. Please wait for your turn to talk.

R5 B_INFO Y/N := (360)
  subjects.do { ... }
    sumGD4 = sum(same(Group), VoteOrDiscuss4);
  subjects.do { ... }
    Participate = if(sumGD4 > 4 & Type == 2, 1, 0);
  subjects.do { ... }
    Info_B5 = 0;
    CandidateDisplay_A5 = find(same(Group) & Type == 1, CandidateShared_A5);
    CandidateDisplay_B4 = find(same(Group) & Type == 2, CandidateShared_B4);
    CandidateDisplay_C4 = find(same(Group) & Type == 3, CandidateShared_C4);
    CandidateDisplay_D4 = find(same(Group) & Type == 4, CandidateShared_D4);
    InformationShared_A1 = find(same(Group) & Type == 1, InformationSharing_A1);
    InformationShared_C1 = find(same(Group) & Type == 3, InformationSharing_C1);
    InformationShared_D1 = find(same(Group) & Type == 4, InformationSharing_D1);

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InformationShared_D1 = find(same(Group) & Type == 4, InformationSharing_D1);
InformationShared_A2 = find(same(Group) & Type == 1, InformationSharing_A2);
InformationShared_C2 = find(same(Group) & Type == 3, InformationSharing_C2);
InformationShared_D2 = find(same(Group) & Type == 4, InformationSharing_D2);
InformationShared_A3 = find(same(Group) & Type == 1, InformationSharing_A3);
InformationShared_C3 = find(same(Group) & Type == 3, InformationSharing_C3);
InformationShared_D3 = find(same(Group) & Type == 4, InformationSharing_D3);
InformationShared_A4 = find(same(Group) & Type == 1, InformationSharing_A4);
InformationShared_C4 = find(same(Group) & Type == 3, InformationSharing_C4);
InformationShared_D4 = find(same(Group) & Type == 4, InformationSharing_D4);
InformationShared_A5 = find(same(Group) & Type == 1, InformationSharing_A5);
CandidateSharing_B5 = 0;

Active screen
  Info Shared
    Find the information your colleague shared with you so far below:
    OUT( InformationShared_A1 )
    OUT( InformationShared_C1 )
    OUT( InformationShared_D1 )
    OUT( InformationShared_A2 )
    OUT( InformationShared_C2 )
    OUT( InformationShared_D2 )
    OUT( InformationShared_A3 )
    OUT( InformationShared_C3 )
    OUT( InformationShared_D3 )
    OUT( InformationShared_A4 )
    OUT( InformationShared_C4 )
    OUT( InformationShared_D4 )
    OUT( InformationShared_A5 )
  Your Turn
    It is your turn again!
    Find your colleague's current preference below:
    OUT( CandidateDisplay_A5 )
    OUT( CandidateDisplay_C4 )
    OUT( CandidateDisplay_D4 )
    As a reminder, this is the information available to you: - Candidate 1 is known to be impatient with customer complaints -

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  As a reminder, this is the information available to you: - Candidate 1 is known to be impatient with customer complaints -
  Last round you preferred: : OUT( CandidateDisplay_B4 )
  Please choose your current candidate preference: IN( CandidateSharing_B5 )
  Do you want to share information about any of the candidates with your colleagues?: IN( Info_B5 )
  Thanks! Let's see what your colleagues have to say...

Waitingscreen
  Waiting Text
    Currently your colleagues are discussing the candidates. Please wait for your turn to talk.

R5 B_INFO YES := (360)
  subjects.do { ... }
    InfoYes_B5 = find(same(Group) & Type == 2, Info_B5);
  subjects.do { ... }
    Participate = if(Type == 2 & InfoYes_B5 == 1, 1, 0);
  subjects.do { ... }
    CandidateShared_B5 = find(same(Group) & Type == 2, CandidateSharing_B5);
    InformationSharing_B5=0;

Active screen
  Sharing
    You chose to share information!
    As a reminder, you currently prefer: : OUT( CandidateShared_B5 )
    Please select the info you would like to share?: IN( InformationSharing_B5 )
    Thanks! Let's see what your colleagues have to say...

Waitingscreen
  Waiting Text
    Currently your colleagues are discussing the candidates. Please wait for your turn to talk.

R5 C_INFO Y/N := (360)
  subjects.do { ... }
    sumGD4 = sum(same(Group), VoteOrDiscuss4);
  subjects.do { ... }
    Participate = if(sumGD4 > 4 & Type == 3, 1, 0);
  subjects.do { ... }
    Info_C5 = 0;

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Info_C5 = 0;
CandidateDisplay_A5 = find(same(Group) & Type == 1, CandidateShared_A5);
CandidateDisplay_B5 = find(same(Group) & Type == 2, CandidateShared_B5);
CandidateDisplay_C4 = find(same(Group) & Type == 3, CandidateShared_C4);
CandidateDisplay_D4 = find(same(Group) & Type == 4, CandidateShared_D4);
InformationShared_A1 = find(same(Group) & Type == 1, InformationSharing_A1);
InformationShared_B1 = find(same(Group) & Type == 2, InformationSharing_B1);
InformationShared_D1 = find(same(Group) & Type == 4, InformationSharing_D1);
InformationShared_A2 = find(same(Group) & Type == 1, InformationSharing_A2);
InformationShared_B2 = find(same(Group) & Type == 2, InformationSharing_B2);
InformationShared_D2 = find(same(Group) & Type == 4, InformationSharing_D2);
InformationShared_A3 = find(same(Group) & Type == 1, InformationSharing_A3);
InformationShared_B3 = find(same(Group) & Type == 2, InformationSharing_B3);
InformationShared_D3 = find(same(Group) & Type == 4, InformationSharing_D3);
InformationShared_A4 = find(same(Group) & Type == 1, InformationSharing_A4);
InformationShared_B4 = find(same(Group) & Type == 2, InformationSharing_B4);
InformationShared_D4 = find(same(Group) & Type == 4, InformationSharing_D4);
InformationShared_A5 = find(same(Group) & Type == 1, InformationSharing_A5);
InformationShared_B5 = find(same(Group) & Type == 2, InformationSharing_B5);
CandidateSharing_C5 = 0;

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#### Active screen

##### Info Shared

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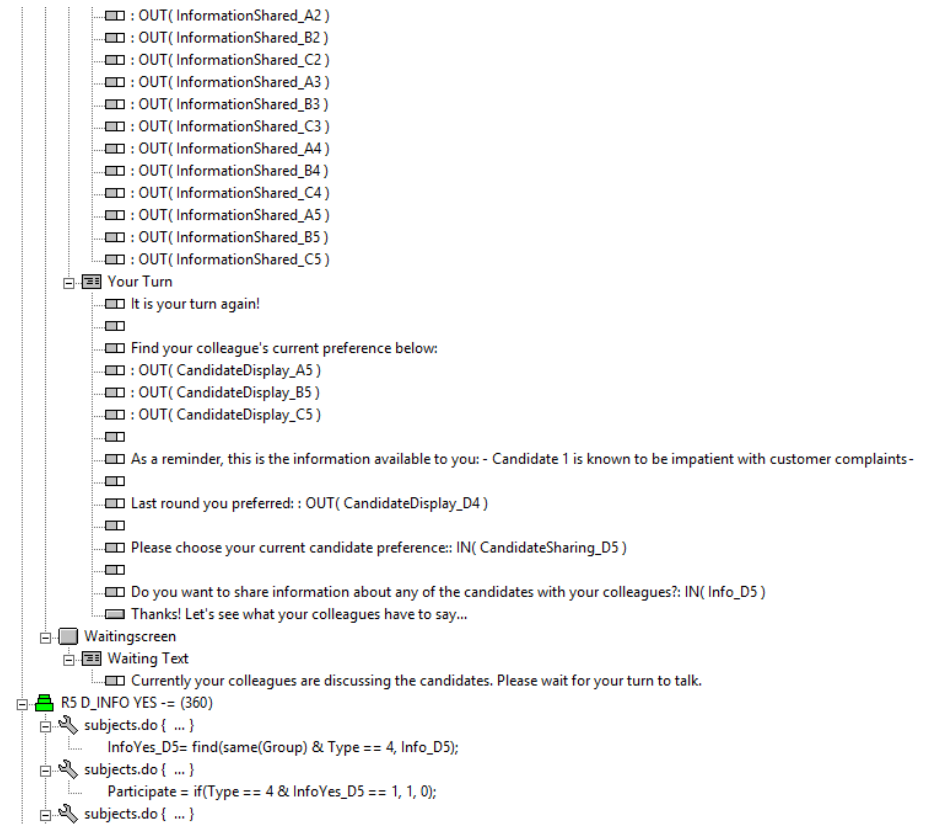
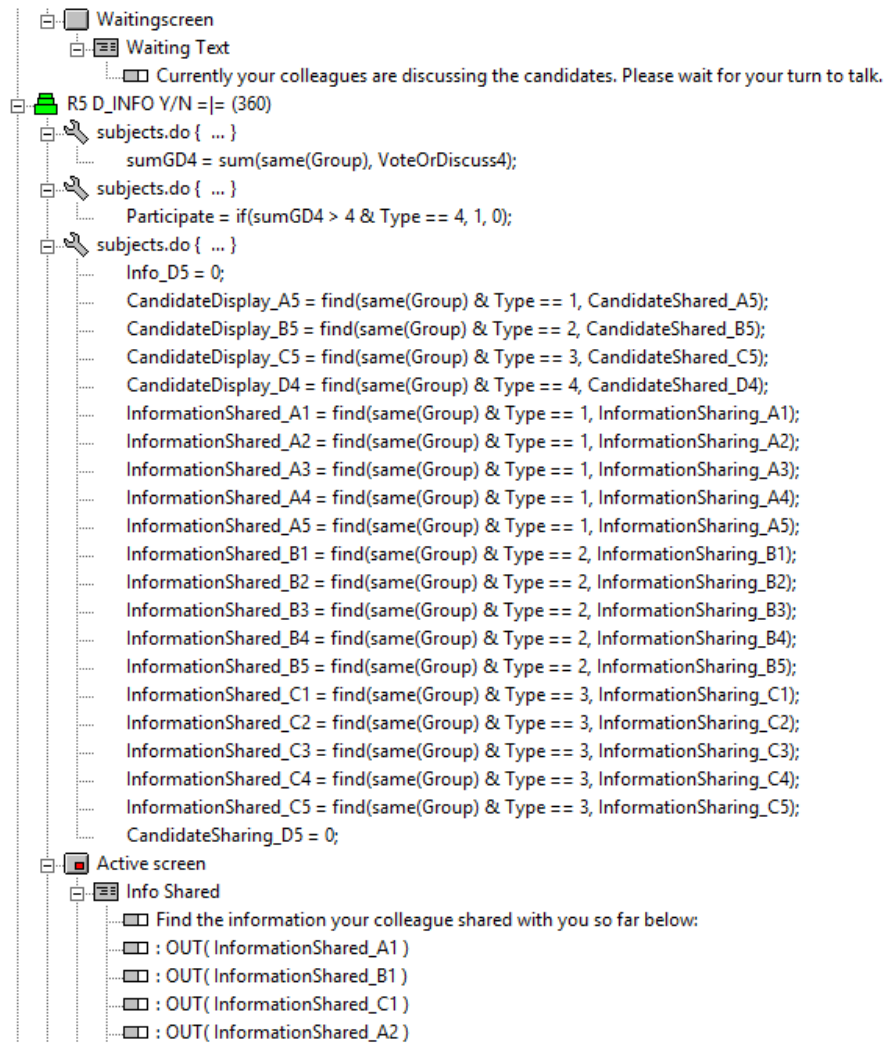
Find the information your colleagues shared with you so far below:
: OUT( InformationShared_A1 )
: OUT( InformationShared_B1 )
: OUT( InformationShared_D1 )
: OUT( InformationShared_A2 )
: OUT( InformationShared_B2 )
: OUT( InformationShared_D2 )
: OUT( InformationShared_A3 )
: OUT( InformationShared_B3 )
: OUT( InformationShared_D3 )
: OUT( InformationShared_A4 )
: OUT( InformationShared_B4 )
: OUT( InformationShared_D4 )
: OUT( InformationShared_A5 )
: OUT( InformationShared_B5 )

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: OUT( InformationShared_B5 )
Your Turn
It is your turn again!
Find your colleagues' current preferences below:
: OUT( CandidateDisplay_A5 )
: OUT( CandidateDisplay_B5 )
: OUT( CandidateDisplay_D4 )
As a reminder, this is the information available to you: - Candidate 1 is known to be impatient with customer complaints-
Last round you preferred:: : OUT( CandidateDisplay_C4 )
Please choose your current candidate preference: IN( CandidateSharing_C5 )
Do you want to share information about any of the candidates with your colleagues?: IN( Info_C5 )
Thanks! Let's see what your colleagues have to say...
WaitingScreen
Waiting Text
Currently your colleagues are discussing the candidates. Please wait for your turn to talk.
R5 C_INFO YES -= (360)
subjects.do { ... }
InfoYes_C5 = find(same(Group) & Type == 3, Info_C5);
subjects.do { ... }
Participate = if(Type == 3 & InfoYes_C5 == 1, 1, 0);
subjects.do { ... }
CandidateShared_C5= find(same(Group) & Type == 3, CandidateSharing_C5);
InformationSharing_C5 = 0;
Active screen
Sharing
You chose to share information!
As a reminder, you currently prefer: : OUT( CandidateShared_C5 )
Please select the info you would like to share?: IN( InformationSharing_C5 )
Thanks! Let's see what your colleagues have to say...
WaitingScreen

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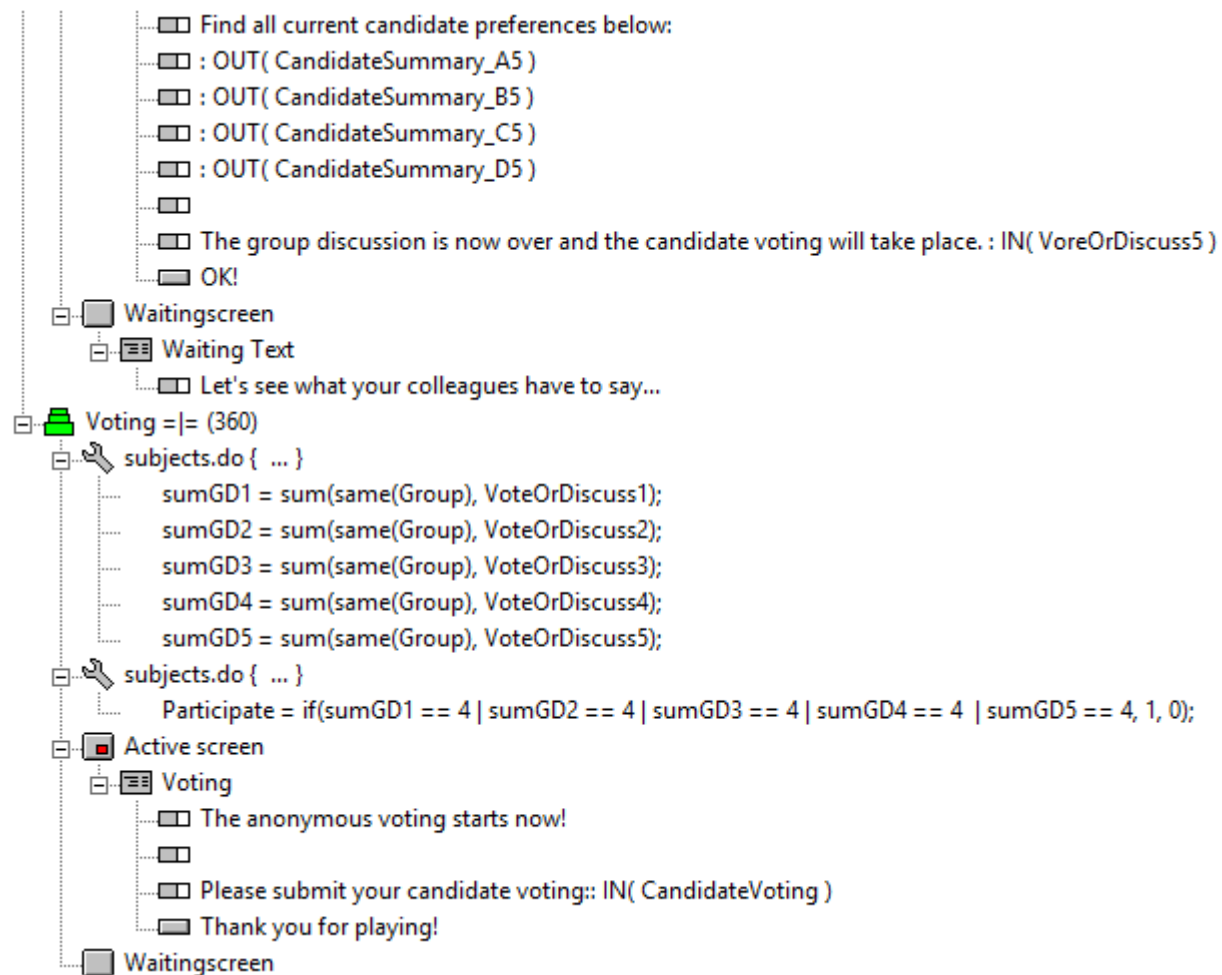
subjects.do { ... }
    CandidateShared_D5 = find(same(Group) & Type == 4, CandidateSharing_D5);
    InformationSharing_D5=0;
Active screen
    Sharing
        You chose to share information!
        As a reminder, you currently prefer: OUT( CandidateShared_D5 )
        Please select the info you would like to share?: IN( InformationSharing_D5 )
        Thanks! Let's see what your colleagues have to say...
    Waiting screen
        Waiting Text
            Currently your colleagues are discussing the candidates. Please wait for your turn to talk.
Summary & Voting 5 =| (360)
    subjects.do { ... }
        sumGD4 = sum(same(Group), VoteOrDiscuss4);
    subjects.do { ... }
        Participate = if(sumGD4 > 4, 1, 0);
    subjects.do { ... }
        CandidateDisplay_D5 = find(same(Group) & Type == 4, CandidateShared_D5);
    subjects.do { ... }
        VoteOrDiscuss5 = 0;
        CandidateSummary_A5 = find(same(Group) & Type == 1, CandidateDisplay_A5);
        CandidateSummary_B5 = find(same(Group) & Type == 2, CandidateDisplay_B5);
        CandidateSummary_C5 = find(same(Group) & Type == 3, CandidateDisplay_C5);
        CandidateSummary_D5 = find(same(Group) & Type == 4, CandidateDisplay_D5);
        InformationShared_A1 = find(same(Group) & Type == 1, InformationSharing_A1);
        InformationShared_B1 = find(same(Group) & Type == 2, InformationSharing_B1);
        InformationShared_C1 = find(same(Group) & Type == 3, InformationSharing_C1);
        InformationShared_D1 = find(same(Group) & Type == 4, InformationSharing_D1);
        InformationShared_A2 = find(same(Group) & Type == 1, InformationSharing_A2);
        InformationShared_B2 = find(same(Group) & Type == 2, InformationSharing_B2);
        InformationShared_C2 = find(same(Group) & Type == 3, InformationSharing_C2);
        InformationShared_D2 = find(same(Group) & Type == 4, InformationSharing_D2);
        InformationShared_A3 = find(same(Group) & Type == 1, InformationSharing_A3);
        InformationShared_B3 = find(same(Group) & Type == 2, InformationSharing_B3);

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InformationShared_B3 = find(same(Group) & Type == 2, InformationSharing_B3);
InformationShared_C3 = find(same(Group) & Type == 3, InformationSharing_C3);
InformationShared_D3 = find(same(Group) & Type == 4, InformationSharing_D3);
InformationShared_A4 = find(same(Group) & Type == 1, InformationSharing_A4);
InformationShared_B4 = find(same(Group) & Type == 2, InformationSharing_B4);
InformationShared_C4 = find(same(Group) & Type == 3, InformationSharing_C4);
InformationShared_D4 = find(same(Group) & Type == 4, InformationSharing_D4);
InformationShared_A5 = find(same(Group) & Type == 1, InformationSharing_A5);
InformationShared_B5 = find(same(Group) & Type == 2, InformationSharing_B5);
InformationShared_C5 = find(same(Group) & Type == 3, InformationSharing_C5);
InformationShared_D5 = find(same(Group) & Type == 4, InformationSharing_D5);
Active screen
    Info Shared
        Find the information shared so far:
        OUT( InformationShared_A1 )
        OUT( InformationShared_B1 )
        OUT( InformationShared_C1 )
        OUT( InformationShared_D1 )
        OUT( InformationShared_A2 )
        OUT( InformationShared_B2 )
        OUT( InformationShared_C2 )
        OUT( InformationShared_D2 )
        OUT( InformationShared_A3 )
        OUT( InformationShared_B3 )
        OUT( InformationShared_C3 )
        OUT( InformationShared_D3 )
        OUT( InformationShared_A4 )
        OUT( InformationShared_B4 )
        OUT( InformationShared_C4 )
        OUT( InformationShared_D4 )
        OUT( InformationShared_A5 )
        OUT( InformationShared_B5 )
        OUT( InformationShared_C5 )
        OUT( InformationShared_D5 )
    Summary
        The fifth round is over. You have the chance to propose an anonymous candidate voting or proceed with the group discussion to share and collect more information.

```



### Exemplary excerpts of the experiment:

Periode	1 von 1	Verbleibende Zeit [sec]: 232
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You are presented with a hiring decision.

Two candidates applied for a job vacancy at your firm. Your boss asked you and three of your colleagues to discuss all candidates as a group and select ONE candidate to invite for a job interview. Candidates are ultimately elected by vote.

Before a group discussion starts, you will get a chance to look at each candidate's qualifications individually and decide for yourself which person is most suitable for the job. After that, you will meet with your colleagues to discuss the candidates.

If the candidate you selected before the group discussion is also the one presented to your boss by the group after the group discussion, you can take credit and improve your standing within the firm. However, you are also allowed to change your mind about candidates during the course of the discussion.

Keep in mind that your boss wants to fill the vacant position very urgently and that he needs a final decision from your group as soon as possible.

Before we start please indicate your gender: ☐ Male ☐ Female

Everything understood - Let's start!


Figure 14: Task description (Treatment B: “enthusiasm repeated”)



Periode

1 von 1

Verbleibende Zeit [sec]: 322



You have to select a candidate for the position of

RETAIL MANAGER

You would prefer an applicant...

- ... with relevant professional experience
- ... with great work ethics

Please find the candidate descriptions available to you below:

<p>Candidate 1</p> <ul style="list-style-type: none"> <li>... has experience with managing budgets</li> <li>... is great at maintaining financial records</li> <li>... has a background in business administration</li> <li>... comes with great attention to detail</li> <li>... is excellent with developing pricing strategies</li> </ul>	<p>Candidate 2</p> <ul style="list-style-type: none"> <li>... was not able to reach performance goals at his/her previous firm</li> <li>... has a reputation of making bad hiring decisions</li> <li>... tends to loose his/her temper rather quickly</li> <li>... is known to share company secrets with the competition</li> <li>... is unwilling to manage more than one store</li> </ul>
--	--

Which candidate do you personally prefer at this point in time?

☐ Candidate 1
 ☐ Candidate 2


Decision made! Next, the group discussion will start...

Figure 15: Candidate descriptions, Agent A (Treatment B: “enthusiasm repeated”)

Periode

1 von 1

Verbleibende Zeit [sec]: 283



You have to select a candidate for the position of

RETAIL MANAGER

You would prefer an applicant...

- ... with great team building abilities
- ... with an academic background

Please find the candidate descriptions available to you below:

Candidate 1	Candidate 2
<ul style="list-style-type: none"> <li>... is known to be impatient with customer complaints</li> <li>... does not believe in team work and team building activities</li> <li>... tends to go over budget with store investments</li> <li>... is unwilling to work overtime</li> <li>... is known to be an authoritarian leader</li> </ul>	<ul style="list-style-type: none"> <li>... has excellent team development abilities</li> <li>... has a background in marketing and sales</li> <li>... is great at organizing promotional events</li> <li>... introduced a cloud scheduling system at his/her old firm</li> <li>... is willing to manage two or more stores in the near future</li> </ul>

Which candidate do you personally prefer at this point in time?

☐ Candidate 1
 ☐ Candidate 2


Decision made! Next, the group discussion will start...

Figure 16: Candidate descriptions, Agent B (Treatment B: “enthusiasm repeated”)

Periode

1 von 1

Verbleibende Zeit [sec]: 283



You have to select a candidate for the position of

RETAIL MANAGER

You would prefer an applicant...

- ... with great team building abilities
- ... with an academic background

Please find the candidate descriptions available to you below:

Candidate 1	Candidate 2
<ul style="list-style-type: none"> <li>... is known to be impatient with customer complaints</li> <li>... does not believe in team work and team building activities</li> <li>... tends to go over budget with store investments</li> <li>... is unwilling to work overtime</li> <li>... is known to be an authoritarian leader</li> </ul>	<ul style="list-style-type: none"> <li>... has excellent team development abilities</li> <li>... has a background in marketing and sales</li> <li>... is great at organizing promotional events</li> <li>... introduced a cloud scheduling system at his/her old firm</li> <li>... is willing to manage two or more stores in the near future</li> </ul>

Which candidate do you personally prefer at this point in time?

☐ Candidate 1  
☐ Candidate 2


Decision made! Next, the group discussion will start...

Figure 17: Candidate descriptions, Agent C & Agent D (Treatment B: “enthusiasm repeated”)

Periode

1 von 1

Verbleibende Zeit [sec]: 359



Let's start with the group discussion. You will be meeting with three of your colleagues in a conference room shortly to discuss which of the two candidates you as a group want to present to your boss.

When it is your turn to talk, you **HAVE** to share your candidate preference with your colleagues, but you **CAN** choose to share **ONE** candidate-specific information with your discussion group.

After one round of discussing, you are allowed to stop the discussion and suggest a candidate voting to choose a candidate for presentation. Only if all members of your group want to vote for a candidate, the candidate voting will actually take place, otherwise, the group discussion will go on. Candidate votings will be anonymous, so the ultimate outcome will not be published.

There will be a total of five discussion rounds, which means you have the chance to voice your opinion six times. If nobody suggested a candidate voting until then, you will enter the voting stage automatically.

Please keep in mind that the group discussion is there to collect as much information about the two candidates as possible, however, do not feel pressured to share information if you do not want to.

OK! Let's enter the conference room and find a great candidate.

Figure 18: Introduction before the group discussion (Treatment B: “enthusiasm repeated”)

Periode <div style="text-align: center; margin-top: 10px;">1 von 1</div>	Verbleibende Zeit [sec]: 357
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Find the information your colleagues shared with you so far below:

Candidate 1 comes with great attention to detail

Candidate 2 introduced a cloud scheduling system at his/her old firm

Your colleagues opened the discussion.

Find your colleagues' current preferences below:

Candidate 1  
 Candidate 2

Now it is your turn!

As a reminder, this is the information available to you:

- Candidate 1 is known to be impatient with customer complaints
- Candidate 1 does not believe in team work and team building activities
- Candidate 1 tends to go over budget with store investments
- Candidate 1 is unwilling to work overtime
- Candidate 1 is known to be an authoritarian leader
- Candidate 2 was not able to reach performance goals at his/her previous firm
- Candidate 2 has a reputation of making bad hiring decisions
- Candidate 2 tends to loose his/her temper rather quickly
- Candidate 2 is known to share company secrets with the competition
- Candidate 2 is unwilling to manage more than one store

You initially preferred: Candidate 1

Please choose your current candidate preference:

☐ Candidate 1  
☐ Candidate 2

Do you want to share information about any of the candidates with your colleagues?

☐ Yes  
☐ No

Thanks! Let's see what your colleagues have to say...

Figure 19: Discussion round 1, Agent C (Treatment B: “enthusiasm repeated”)

Periode	
1 von 1	Verbleibende Zeit [sec]: 359
<p>Find the information shared so far:</p> <p>Candidate 1 comes with great attention to detail</p> <p>Candidate 2 introduced a cloud scheduling system at his/her old firm</p> <p>Candidate 1 is known to be an authoritarian leader</p> <p>No information was shared</p>	<p>The first round is over. As of now, you have the chance to propose an anonymous candidate voting or proceed with the group discussion to share and collect more information.</p> <p>Find all current candidate preferences below:</p> <p>Candidate 1</p> <p>Candidate 2</p> <p>Candidate 1</p> <p>Candidate 2</p> <p>What should happen next? <input type="radio"/> Candidate Voting <input type="radio"/> Group Discussion</p> <p>OK!</p>

Figure 20: Round 1, summary of candidate preferences and information shared (Treatment B: “enthusiasm repeated”)

Periode <div style="text-align: center; margin-top: 10px;">1 von 1</div>	Verbleibende Zeit [sec]: 355
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Find the information your colleagues shared with you so far below:

Candidate 1 comes with great attention to detail

Candidate 2 introduced a cloud scheduling system at his/her old firm

No information was shared

Candidate 1 is excellent with developing pricing strategies

Candidate 2 has a background in marketing and sales

It is your turn again!

Find your colleagues' current preferences below:

Candidate 1  
 Candidate 2  
 Candidate 2

As a reminder, this is the information available to you:

- Candidate 1 is known to be impatient with customer complaints
- Candidate 1 does not believe in team work and team building activities
- Candidate 1 tends to go over budget with store investments
- Candidate 1 is unwilling to work overtime
- Candidate 1 is known to be an authoritarian leader
- Candidate 2 was not able to reach performance goals at his/her previous firm
- Candidate 2 has a reputation of making bad hiring decisions
- Candidate 2 tends to loose his/her temper rather quickly
- Candidate 2 is known to share company secrets with the competition
- Candidate 2 is unwilling to manage more than one store

Last round you preferred:: Candidate 1

Please choose your current candidate preference:

☐ Candidate 1  
☐ Candidate 2

Do you want to share information about any of the candidates with your colleagues?

☐ Yes  
☐ No

Thanks! Let's see what your colleagues have to say...

Figure 21: Discussion round 2, Agent B (Treatment B: “enthusiasm repeated”)

Periode <div style="text-align: center; margin-top: 10px;">1 von 1</div>	Verbleibende Zeit [sec]: 356
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Find the information your colleagues shared with you so far below:

Candidate 1 comes with great attention to detail

Candidate 2 introduced a cloud scheduling system at his/her old firm

No information was shared

Candidate 1 is excellent with developing pricing strategies

Candidate 2 has a background in marketing and sales

Candidate 2 is unwilling to manage more than one store

Candidate 1 is great at maintaining financial records

Candidate 2 is willing to manage two or more stores in the near future

It is your turn again!

Find your colleagues' current preferences below:

Candidate 1

Candidate 2

Candidate 2

As a reminder, this is the information available to you:

- Candidate 1 is known to be impatient with customer complaints
- Candidate 1 does not believe in team work and team building activities
- Candidate 1 tends to go over budget with store investments
- Candidate 1 is unwilling to work overtime
- Candidate 1 is known to be an authoritarian leader
- Candidate 2 was not able to reach performance goals at his/her previous firm
- Candidate 2 has a reputation of making bad hiring decisions
- Candidate 2 tends to loose his/her temper rather quickly
- Candidate 2 is known to share company secrets with the competition
- Candidate 2 is unwilling to manage more than one store

Last round you preferred:: Candidate 2

Please choose your current candidate preference:

☐ Candidate 1  
☐ Candidate 2

Do you want to share information about any of the candidates with your colleagues?

☐ Yes  
☐ No

**Thanks! Let's see what your colleagues have to say...**

Figure 22: Discussion round 3, Agent A (Treatment B: “enthusiasm repeated”)



Periode <div style="text-align: center;">1 von 1</div>	Verbleibende Zeit [sec]: 359
<p style="text-align: center;">Find the information shared so far:</p> <p>Candidate 1 comes with great attention to detail</p> <p>Candidate 2 introduced a cloud scheduling system at his/her old firm</p> <p>Candidate 1 is known to be an authoritarian leader</p> <p>No information was shared</p> <p>Candidate 1 is excellent with developing pricing strategies</p> <p>Candidate 2 has a background in marketing and sales</p> <p>No information was shared</p> <p>Candidate 2 is unwilling to manage more than one store</p> <p>Candidate 1 is great at maintaining financial records</p> <p>Candidate 2 is willing to manage two or more stores in the near future</p> <p>No information was shared</p> <p>No information was shared</p>	<p>The third round is over. You have the chance to propose an anonymous candidate voting or proceed with the group discussion to share and collect more information.</p> <p style="text-align: center;">Find all current candidate preferences below:</p> <p style="text-align: right;">Candidate 1</p> <p style="text-align: right;">Candidate 2</p> <p style="text-align: right;">Candidate 2</p> <p style="text-align: right;">Candidate 2</p> <p>What should happen next? <input type="radio"/> Candidate Voting <input type="radio"/> Group Discussion</p>   <div style="text-align: right; border: 1px solid black; padding: 2px 10px; background-color: #f0f0f0;">OK!</div>

Figure 23: Round 3, summary of candidate preferences and information shared (Treatment B: “enthusiasm repeated”)

Periode	1 von 1	Verbleibende Zeit [sec]: 359
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The anonymous voting starts now!

Please submit your candidate voting: ☐ I vote for candidate 1  
☐ I vote for candidate 2

Thank you for playing!

Figure 24: Final candidate voting (Treatment B: “enthusiasm repeated”)

### *Experimental Procedure – Treatment C: “enthusiasm once”*

#### **Task description:**

You are presented with a hiring decision.

Two candidates applied for a job vacancy at your firm. Your boss asked you and three of your colleagues to discuss all candidates as a group and select ONE candidate to invite for a job interview. Candidates are ultimately elected by vote.

Before a group discussion starts, you will get a chance to look at each candidate's qualifications individually and decide for yourself which person is most suitable for the job. After that, you will meet with your colleagues to discuss the candidates.

If the candidate you selected before the group discussion is also the one presented to your boss by the group after the group discussion, you can take credit and improve your standing within the firm. However, you are also allowed to change your mind about candidates during the course of the discussion.

Keep in mind that your boss wants to fill the vacant position very urgently and that he needs a final decision from your group as soon as possible.

Before we start please indicate your gender:

- ☐ male
- ☐ female

#### **Candidate descriptions: Agent A**

You have to select a candidate for the position of JUNIOR ARTS DIRECTOR

You would prefer an applicant...

- ... with professional experience in the creative industry
- ... with a creative personality

Please find the candidate descriptions available to you below:

##### *Candidate 1*

- ... lived in London for three years
- ... is familiar with the necessary software (Adobe Creative, etc.)
- ... worked as a marketing intern in two different firms
- ... writes and illustrates short stories in his/her free time
- ... brings excellent recommendations from previous firms

##### *Candidate 2*

- ... has a background in corporate finance
- ... did not stay longer than a year at previous companies
- ... could be a bit too old for a junior position
- ... has too little experience with the necessary software
- ... has two other standing job offers

Which candidate do you personally prefer at this point in time?

- ☐ Candidate 1
- ☐ Candidate 2

### **Candidate descriptions: Agent B**

You have to select a candidate for the position of JUNIOR ARTS DIRECTOR

You would prefer an applicant...

- ... with excellent language skills
- ... with experience in illustration

Please find the candidate descriptions available to you below:

#### *Candidate 1*

- ... has a degree in agriculture
- ... seems to jump from firm to firm without the intention to stay longer
- ... could be too immature due to his/her young age
- ... seems a little eccentric
- ... is said to be unwilling to follow rules

#### *Candidate 2*

- ... brings excellent language skills
- ... has a lot of creative work experience
- ... is currently getting a degree in marketing
- ... worked as a photographer for many years
- ... hosts photography exhibitions in his/her free time

Which candidate do you personally prefer at this point in time?

- ☐ Candidate 1
- ☐ Candidate 2

### **Candidate descriptions: Agent C & Agent D**

You have to select a candidate for the position of JUNIOR ARTS DIRECTOR

You have no prerequisites concerning the candidates.

Please find the candidate descriptions available to you below:

#### *Candidate 1*

- ... lived in London for three years
- ... is familiar with the necessary software (Adobe Creative, etc.)
- ... worked as a marketing intern in two different firms
- ... writes and illustrates short stories in his/her free time
- ... brings excellent recommendations from previous firms

#### *Candidate 2*

- ... brings excellent language skills
- ... has a lot of creative work experience
- ... is currently getting a degree in marketing
- ... worked as a photographer for many years
- ... hosts photography exhibitions in his/her free time

Which candidate do you personally prefer at this point in time?

- ☐ Candidate 1
- ☐ Candidate 2

**Introduction before the group discussion:**

Let's start with the group discussion. You will be meeting with three of your colleagues in a conference room shortly to discuss which of the two candidates you as a group want to present to your boss.

When it is your turn to talk, you HAVE to share your candidate preference with your colleagues, but you CAN choose to share ONE candidate-specific information with your discussion group.

After only one round of discussing, the candidate voting will take place. Candidate votings will be anonymous, so the ultimate outcome will not be published.

Please keep in mind that the group discussion is there to collect as much information about the two candidates as possible, however, do not feel pressured to share information if you do not want to.

**Summary & final candidate voting:**

The group discussion is over. The anonymous candidate voting will start now.

Find all current candidate preferences below:

- current preference of agent A
- current preference of agent B
- current preference of agent C
- current preference of agent D

*- All information shared by the group members were displayed on the right -*

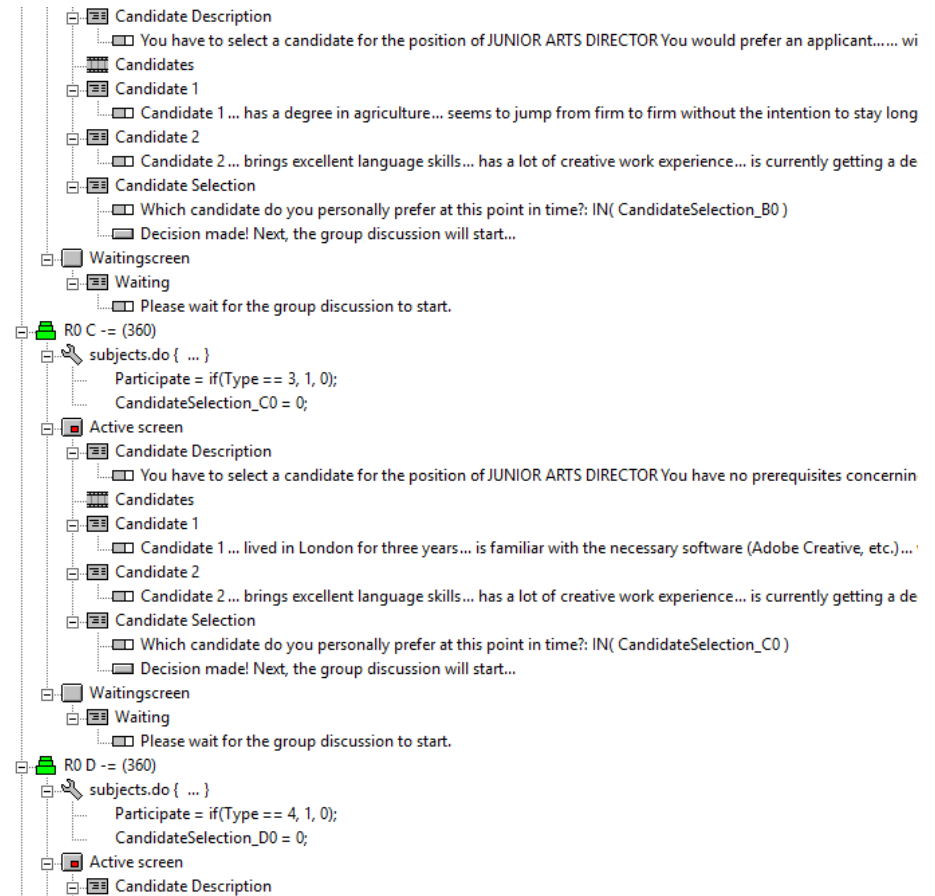
**Final candidate voting:**

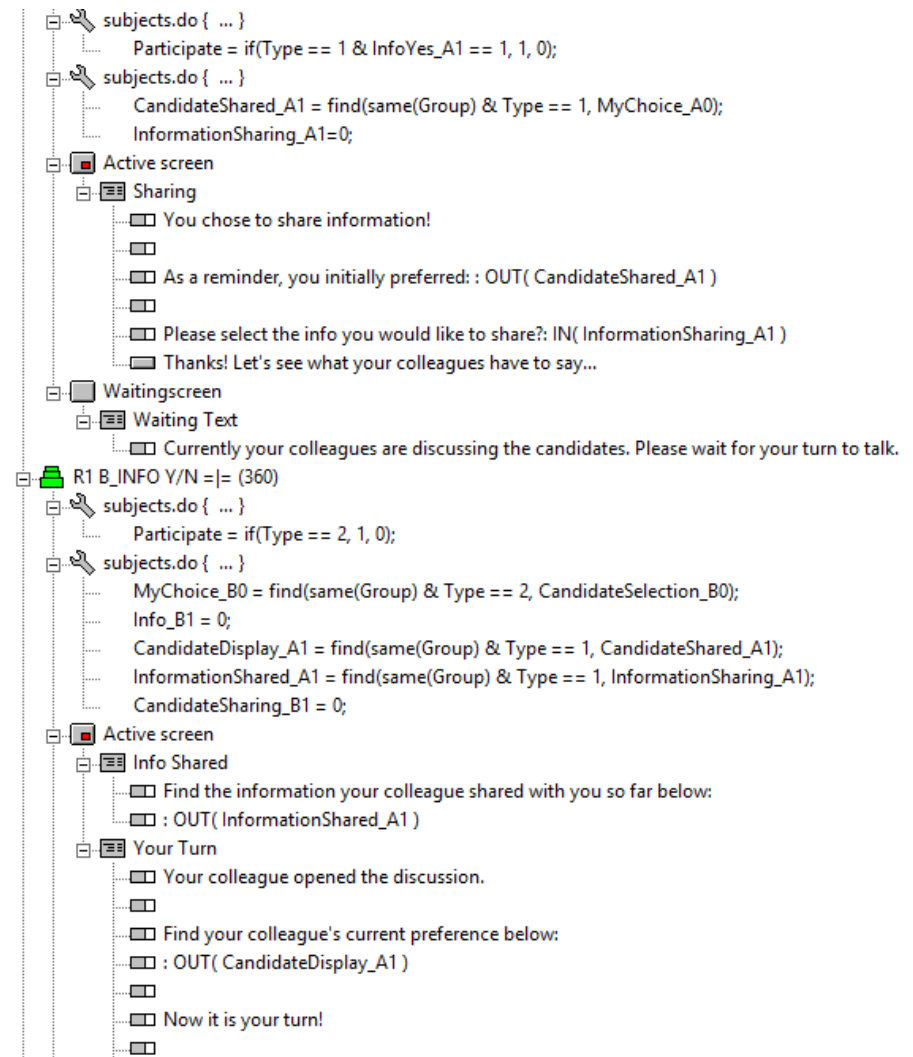
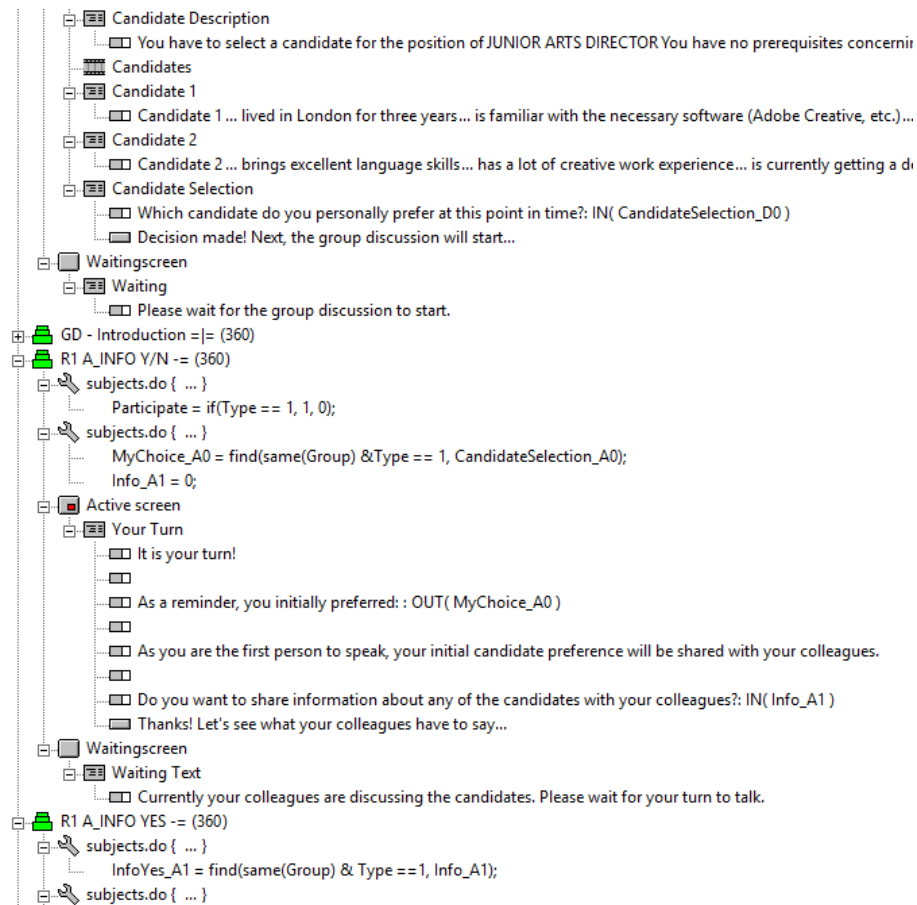
The anonymous voting starts now!

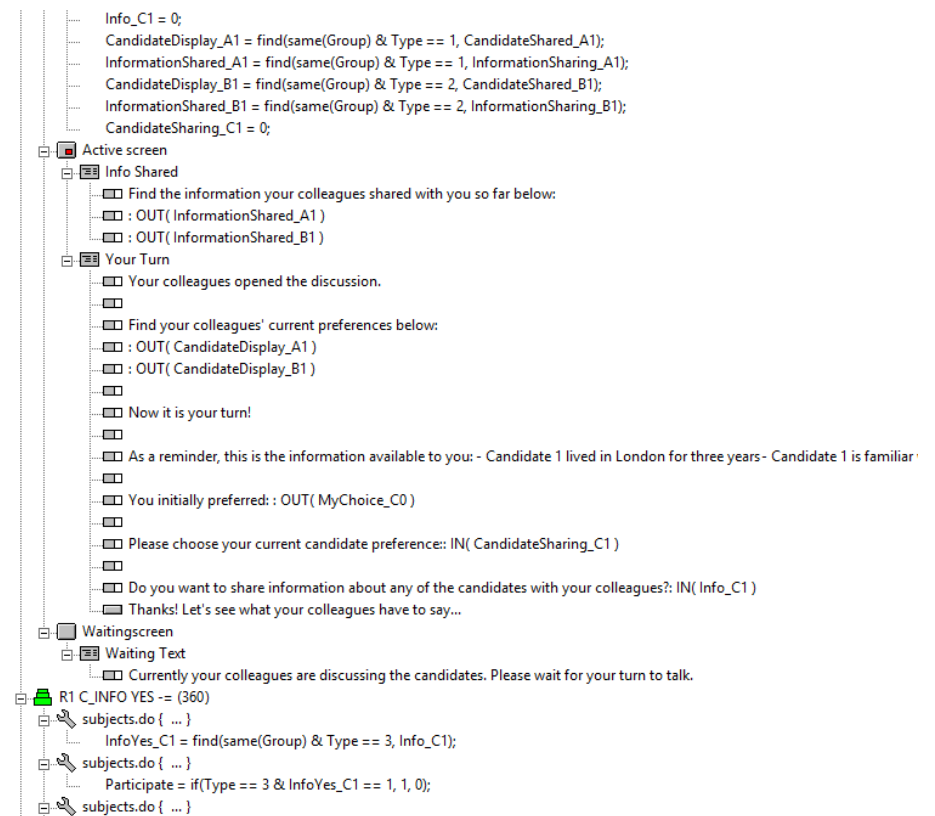
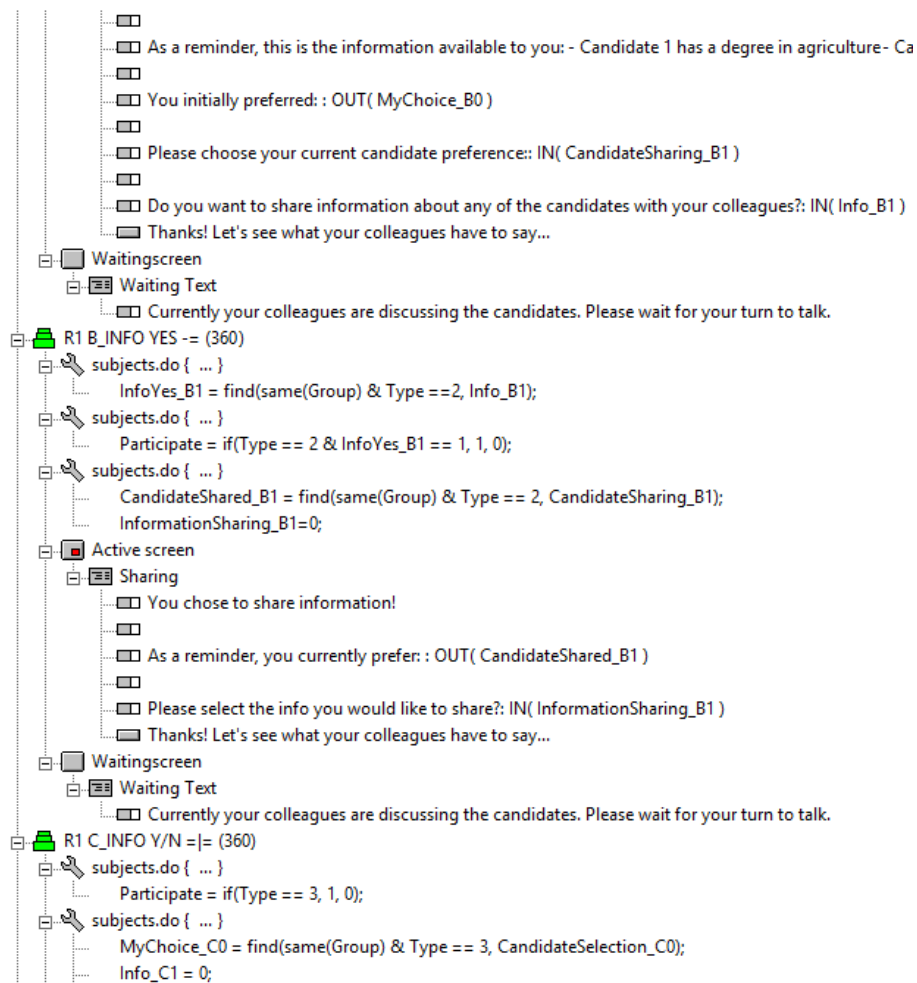
Please submit your candidate voting:

- ☐ Candidate 1
- ☐ Candidate 2

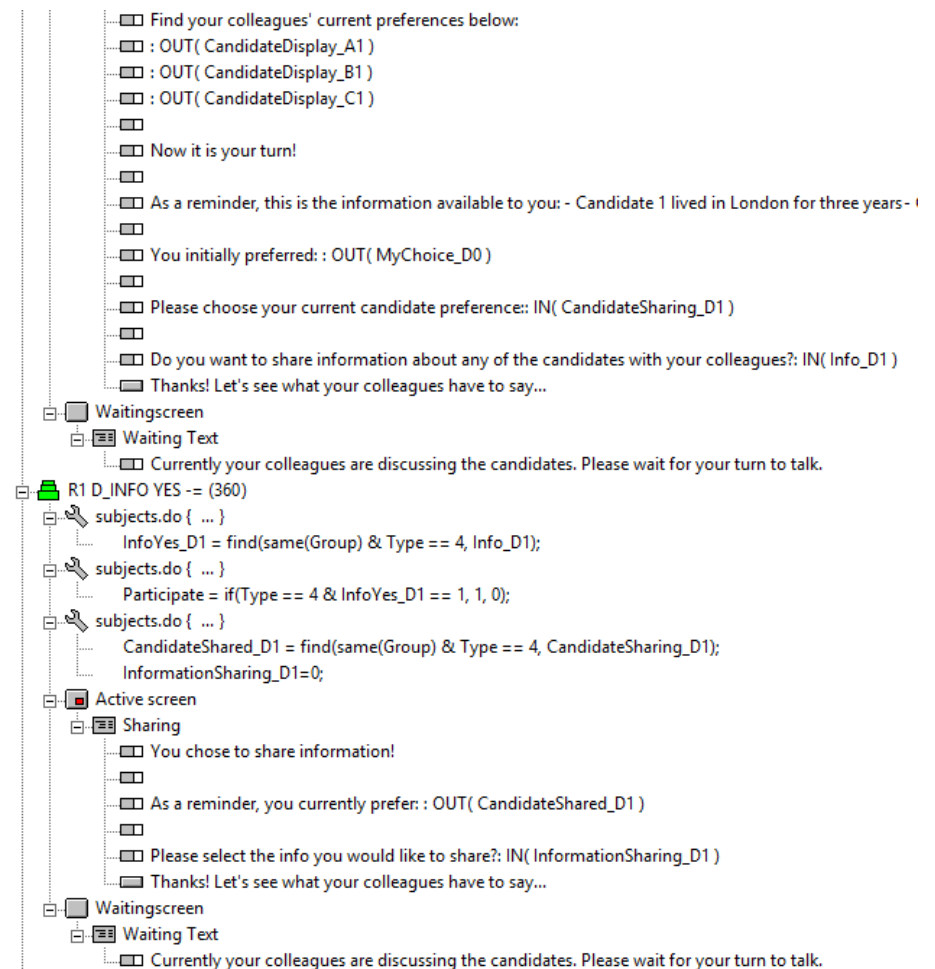
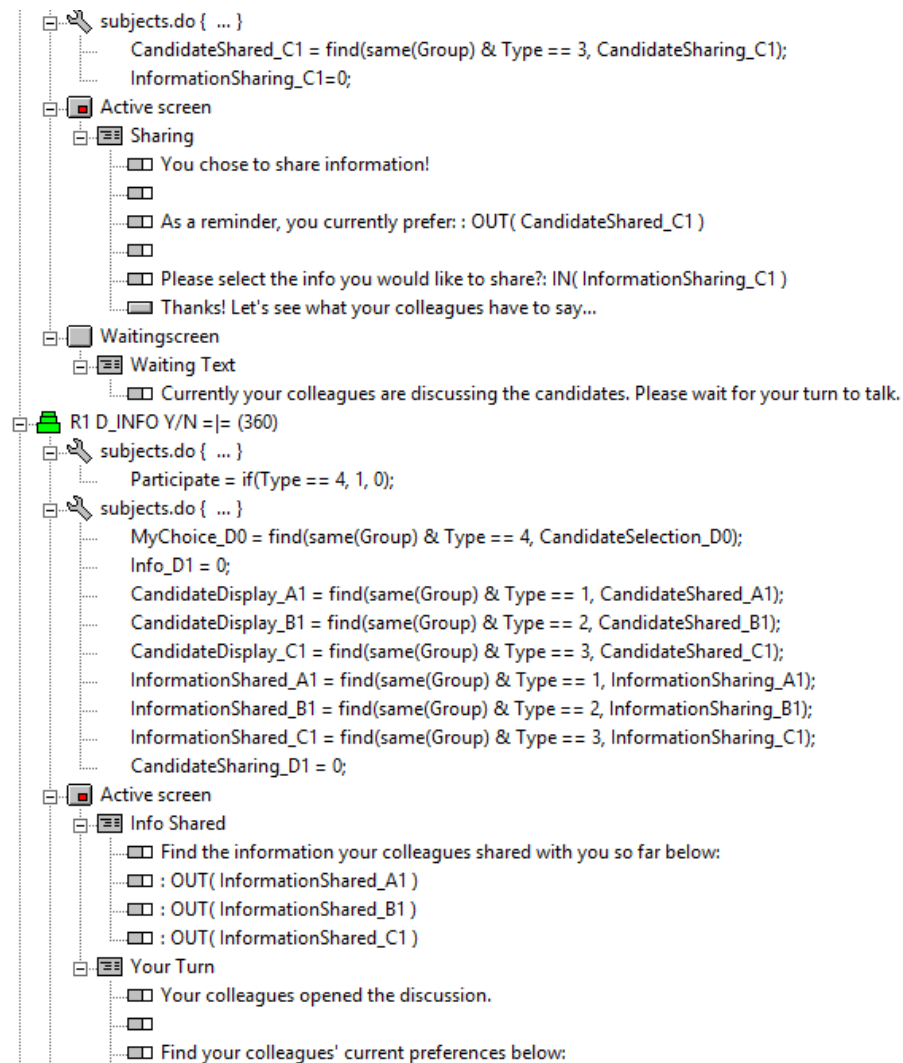
## z-Tree code:

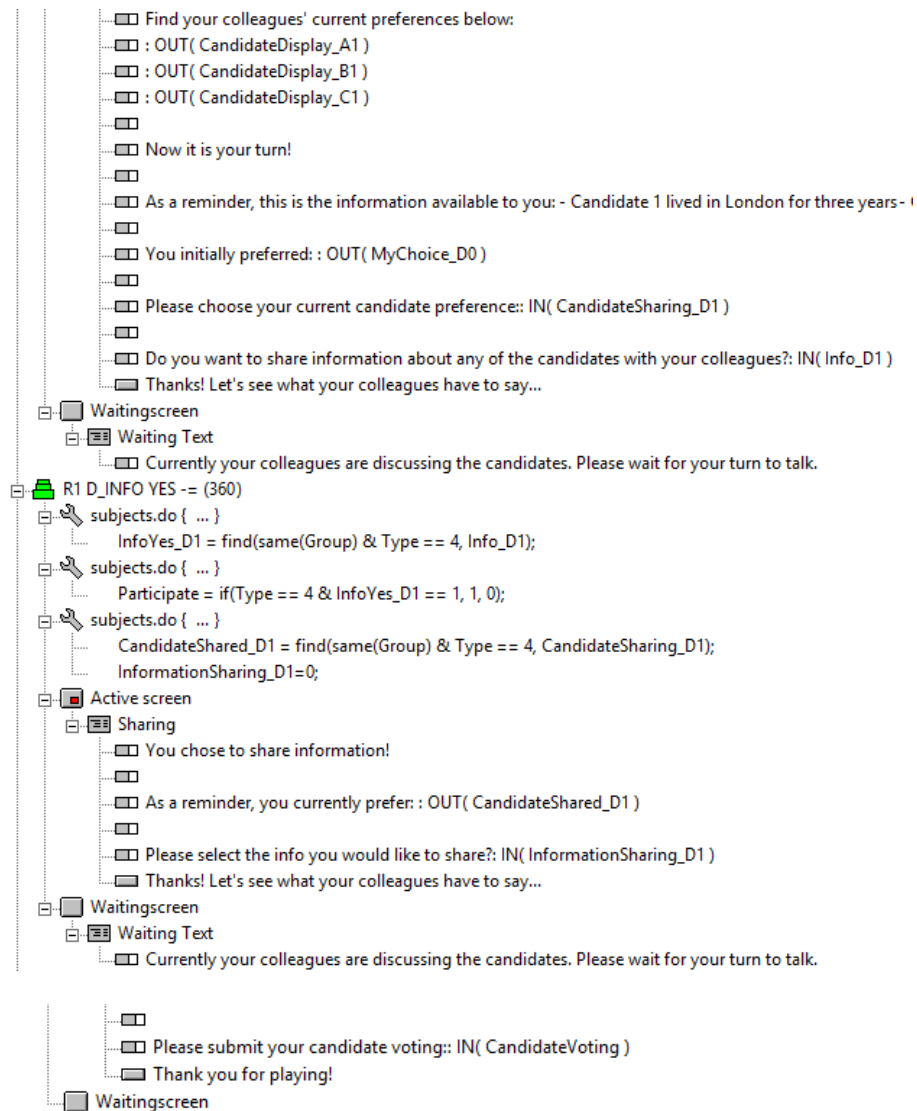













Periode <div style="text-align: center; margin-top: 10px;">1 von 1</div>	Verbleibende Zeit [sec]: 283
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You are presented with a hiring decision.

Two candidates applied for a job vacancy at your firm. Your boss asked you and three of your colleagues to discuss all candidates as a group and select ONE candidate to invite for a job interview. Candidates are ultimately elected by vote.

Before a group discussion starts, you will get a chance to look at each candidate's qualifications individually and decide for yourself which person is most suitable for the job. After that, you will meet with your colleagues to discuss the candidates.

If the candidate you selected before the group discussion is also the one presented to your boss by the group after the group discussion, you can take credit and improve your standing within the firm. However, you are also allowed to change your mind about candidates during the course of the discussion.

Keep in mind that your boss wants to fill the vacant position very urgently and that he needs a final decision from your group as soon as possible.

Before we start please indicate your gender:
 ☐ Male
☐ Female

Everything understood - Let's start!

Figure 25: Task description (Treatment C: “enthusiasm once”)

Periode

1 von 1

Verbleibende Zeit [sec]: 357



You have to select a candidate for the position of

**JUNIOR ARTS DIRECTOR**

You would prefer an applicant...

- ... with professional experience in the creative industry
- ... with a creative personality

Please find the candidate descriptions available to you below:

Candidate 1	Candidate 2
<ul style="list-style-type: none"> <li>... lived in London for three years</li> <li>... is familiar with the necessary software (Adobe Creative, etc.)</li> <li>... worked as a marketing intern in two different firms</li> <li>... writes and illustrates short stories in his/her free time</li> <li>... brings excellent recommendations from previous firms</li> </ul>	<ul style="list-style-type: none"> <li>... has a background in corporate finance</li> <li>... did not stay longer than a year at previous companies</li> <li>... could be a bit too old for a junior position</li> <li>... has too little experience with the necessary software</li> <li>... has two other standing job offers</li> </ul>

Which candidate do you personally prefer at this point in time?

☐ Candidate 1  
☐ Candidate 2


**Decision made! Next, the group discussion will start...**

Figure 26: Candidate descriptions, Agent A (Treatment C: “enthusiasm once”)

Periode

1 von 1

Verbleibende Zeit [sec]: 358



You have to select a candidate for the position of

**JUNIOR ARTS DIRECTOR**

You would prefer an applicant...

- ... with excellent language skills
- ... with experience in illustration

Please find the candidate descriptions available to you below:

Candidate 1	Candidate 2
<ul style="list-style-type: none"> <li>... has a degree in agriculture</li> <li>... seems to jump from firm to firm without the intention to stay longer</li> <li>... could be too immature due to his/her young age</li> <li>... seems a little eccentric</li> <li>... is said to be unwilling to follow rules</li> </ul>	<ul style="list-style-type: none"> <li>... brings excellent language skills</li> <li>... has a lot of creative work experience</li> <li>... is currently getting a degree in marketing</li> <li>... worked as a photographer for many years</li> <li>... hosts photography exhibitions in his/her free time</li> </ul>

Which candidate do you personally prefer at this point in time?

☐ Candidate 1
 ☐ Candidate 2


Decision made! Next, the group discussion will start...

Figure 27: Candidate descriptions, Agent B (Treatment C: “enthusiasm once”)

Periode

1 von 1

Verbleibende Zeit [sec]: 342



You have to select a candidate for the position of

**JUNIOR ARTS DIRECTOR**

You have no prerequisites concerning the candidates.

Please find the candidate descriptions available to you below:

<p><b>Candidate 1</b></p> <ul style="list-style-type: none"> <li>... lived in London for three years</li> <li>... is familiar with the necessary software (Adobe Creative, etc.)</li> <li>... worked as a marketing intern in two different firms</li> <li>... writes and illustrates short stories in his/her free time</li> <li>... brings excellent recommendations from previous firms</li> </ul>	<p><b>Candidate 2</b></p> <ul style="list-style-type: none"> <li>... brings excellent language skills</li> <li>... has a lot of creative work experience</li> <li>... is currently getting a degree in marketing</li> <li>... worked as a photographer for many years</li> <li>... hosts photography exhibitions in his/her free time</li> </ul>
---	--

Which candidate do you personally prefer at this point in time?

☐ Candidate 1
 ☐ Candidate 2

Decision made! Next, the group discussion will start...

Figure 28: Candidate descriptions, Agent C & Agent D (Treatment C: “enthusiasm once”)

Periode

1 von 1

Verbleibende Zeit [sec]: 357



Let's start with the group discussion. You will be meeting with three of your colleagues in a conference room shortly to discuss which of the two candidates you as a group want to present to your boss.

When it is your turn to talk, you **HAVE** to share your candidate preference with your colleagues, but you **CAN** choose to share **ONE** candidate-specific information with your discussion group.

After only one round of discussing, the candidate voting will take place. Candidate votings will be anonymous, so the ultimate outcome will not be published.

Please keep in mind that the group discussion is there to collect as much information about the two candidates as possible, however, do not feel pressured to share information if you do not want to.

OK! Let's enter the conference room and find a great candidate.

Figure 29: Introduction before the group discussion (Treatment C: "enthusiasm once")

Periode	1 von 1	Verbleibende Zeit [sec]: 351
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It is your turn!

As a reminder, you initially preferred: Candidate 2

As you are the first person to speak, your initial candidate preference will be shared with your colleagues.

Do you want to share information about any of the candidates with your colleagues? ☐ Yes ☐ No

Thanks! Let's see what your colleagues have to say...

Figure 30: Discussion round, Agent A (Treatment C: “enthusiasm once”)



Periode

1 von 1

Verbleibende Zeit [sec]: 357

You chose to share information!

As a reminder, you initially preferred: Candidate 1

Please select the info you would like to share?

- ☐ Candidate 1 lived in London for three years
- ☐ Candidate 1 is familiar with the necessary software (Adobe Creative, etc.)
- ☐ Candidate 1 worked as a marketing intern in two different firms
- ☐ Candidate 1 writes and illustrates short stories in his/her free time
- ☐ Candidate 1 brings excellent recommendations from previous firms
- ☐ Candidate 2 has a background in corporate finance
- ☐ Candidate 2 did not stay longer than a year at previous companies
- ☐ Candidate 2 could be a bit too old for a junior position
- ☐ Candidate 2 has too little experience with the necessary software
- ☐ Candidate 2 has two other standing job offers

Thanks! Let's see what your colleagues have to say...

Figure 31: Information sharing stage (Treatment C: “enthusiasm once”)

Periode <div style="text-align: center; margin-top: 10px;">1 von 1</div>	Verbleibende Zeit [sec]: 306
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Find the information your colleague shared with you so far below:

Candidate 1 is familiar with the necessary software (Adobe Creative, etc.)

Your colleague opened the discussion.

Find your colleague's current preference below:

Candidate 1

Now it is your turn!

As a reminder, this is the information available to you:

- Candidate 1 has a degree in agriculture
- Candidate 1 seems to jump from firm to firm without the intention to stay longer
- Candidate 1 could be too immature due to his/her young age
- Candidate 1 seems a little eccentric
- Candidate 1 is said to be unwilling to follow rules
- Candidate 2 brings excellent language skills
- Candidate 2 has a lot of creative work experience
- Candidate 2 is currently getting a degree in marketing
- Candidate 2 worked as a photographer for many years
- Candidate 2 hosts photography exhibitions in his/her free time

You initially preferred: Candidate 2

Please choose your current candidate preference: ☐ Candidate 1  
☐ Candidate 2

Do you want to share information about any of the candidates with your colleagues? ☐ Yes  
☐ No

Thanks! Let's see what your colleagues have to say...

Figure 32: Discussion round, Agent B (Treatment C: “enthusiasm once”)

Periode <div style="text-align: center; margin-top: 10px;">1 von 1</div>	Verbleibende Zeit [sec]: 355
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Find the information your colleagues shared with you so far below:

Candidate 1 is familiar with the necessary software (Adobe Creative, etc.)

No information was shared

Your colleagues opened the discussion.

Find your colleagues' current preferences below:

Candidate 1  
 Candidate 2

Now it is your turn!

As a reminder, this is the information available to you:

- Candidate 1 lived in London for three years
- Candidate 1 is familiar with the necessary software (Adobe Creative, etc.)
- Candidate 1 worked as a marketing intern in two different firms
- Candidate 1 writes and illustrates short stories in his/her free time
- Candidate 1 brings excellent recommendations from previous firms
- Candidate 2 brings excellent language skills
- Candidate 2 has a lot of creative work experience
- Candidate 2 is currently getting a degree in marketing
- Candidate 2 worked as a photographer for many years
- Candidate 2 hosts photography exhibitions in his/her free time

You initially preferred: Candidate 1

Please choose your current candidate preference:

☐ Candidate 1  
☐ Candidate 2

Do you want to share information about any of the candidates with your colleagues?

☐ Yes  
☐ No

Thanks! Let's see what your colleagues have to say...

Figure 33: Discussion round, Agent C (Treatment C: “enthusiasm once”)

Periode	
1 von 1	Verbleibende Zeit [sec]: 354
<p>Find the information shared by your colleagues:</p> <p>Candidate 1 is familiar with the necessary software (Adobe Creative, etc.)</p> <p>No information was shared</p> <p>Candidate 1 writes and illustrates short stories in his/her free time</p> <p>Candidate 1 brings excellent recommendations from previous firms</p>	<p>The group discussion is over. The anonymous candidate voting will start now.</p> <p>Find your colleagues current candidate preferences below:</p> <p>Candidate 1</p> <p>Candidate 2</p> <p>Candidate 1</p> <p>Candidate 1</p> <p>OK!</p>

Figure 34: Summary of candidate preferences and information shared (Treatment C: “enthusiasm once”)

Periode	1 von 1	Verbleibende Zeit [sec]: 358
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The anonymous voting starts now!

Please submit your candidate voting: ☐ I vote for candidate 1  
☐ I vote for candidate 2

Thank you for playing!

Figure 35: Final candidate voting (Treatment C: “enthusiasm once”)

## Results

Group	Agent ID	Speaking Order	R1_Info	R2_Info	R3_Info	R4_Info	R5_Info	Info p. Person	Group Total	Opinion Change
1	1A	Radom Repeated	0	1	0	0	0	1		0
	1B	Radom Repeated	1	1	1	0	0	3		
	1C	Radom Repeated	1	1	1	0	0	3		
	1D	Radom Repeated	1	1	1	0	0	3	10	
2	2A	Radom Repeated	1	0	0	0	0	1		0
	2B	Radom Repeated	1	1	1	0	0	3		
	2C	Radom Repeated	1	1	0	0	0	2		
	2D	Radom Repeated	1	0	0	0	0	1	7	
3	3A	Radom Repeated	1	1	1	0	0	3		0
	3B	Radom Repeated	0	0	1	0	0	1		
	3C	Radom Repeated	1	1	1	0	0	3		
	3D	Radom Repeated	0	0	0	0	0	0	7	
4	4A	Radom Repeated	0	0	0	0	0	0		0
	4B	Radom Repeated	1	1	0	0	0	2		
	4C	Radom Repeated	1	1	0	0	0	2		
	4D	Radom Repeated	0	0	0	0	0	0	4	
5	5A	Radom Repeated	0	1	0	0	0	1		0
	5B	Radom Repeated	1	1	1	0	0	3		
	5C	Radom Repeated	1	1	1	0	0	3		
	5D	Radom Repeated	1	1	1	0	0	3	10	
1 = Information shared 0 = No information shared										1 = Change 0 = No change

Group	Agent ID	Speaking Order	R1_Info	R2_Info	R3_Info	R4_Info	R5_Info	Info p. Person	Group Total	Opinion Change
6	6A	Radom Repeated	1	1	1	1	1	5		1
	6B	Radom Repeated	1	1	1	0	0	3		
	6C	Radom Repeated	0	0	1	1	1	3		
	6D	Radom Repeated	1	1	1	1	1	5	16	
7	7A	Radom Repeated	1	1	1	0	0	3		0
	7B	Radom Repeated	1	1	1	0	0	3		
	7C	Radom Repeated	1	1	1	0	0	3		
	7D	Radom Repeated	1	1	0	0	0	2	11	
8	8A	Radom Repeated	1	1	1	0	0	3		0
	8B	Radom Repeated	1	1	1	0	0	3		
	8C	Radom Repeated	1	1	1	0	0	3		
	8D	Radom Repeated	1	1	0	0	0	2	11	
9	9A	Radom Repeated	1	1	1	1	0	4		1
	9B	Radom Repeated	1	1	1	1	0	4		
	9C	Radom Repeated	1	1	1	1	0	4		
	9D	Radom Repeated	1	1	1	1	0	4	16	
10	10A	Radom Repeated	1	1	1	1	1	5		0
	10B	Radom Repeated	1	1	1	1	0	4		
	10C	Radom Repeated	1	1	1	1	1	5		
	10D	Radom Repeated	1	1	1	1	0	4	18	
1 = Information shared 0 = No information shared										1 = Change 0 = No change

Group	Agent ID	Speaking Order	R1_Info	R2_Info	R3_Info	R4_Info	R5_Info	Info p. Person	Group Total	Opinion Change
1	1A	Enthusiasm Repeated	1	0	0	0	0	1		1
	1B	Enthusiasm Repeated	1	0	0	0	0	1		
	1C	Enthusiasm Repeated	1	1	0	0	0	2		
	1D	Enthusiasm Repeated	1	1	0	0	0	2	6	
2	2A	Enthusiasm Repeated	1	1	1	0	0	3		0
	2B	Enthusiasm Repeated	1	0	0	0	0	1		
	2C	Enthusiasm Repeated	1	1	0	0	0	2		
	2D	Enthusiasm Repeated	1	1	0	0	0	2	8	
3	3A	Enthusiasm Repeated	1	1	1	0	0	3		1
	3B	Enthusiasm Repeated	1	1	1	0	0	3		
	3C	Enthusiasm Repeated	0	0	0	0	0	0		
	3D	Enthusiasm Repeated	0	0	0	0	0	0	6	
4	4A	Enthusiasm Repeated	1	1	0	0	0	2		1
	4B	Enthusiasm Repeated	0	0	0	0	0	0		
	4C	Enthusiasm Repeated	0	1	0	0	0	1		
	4D	Enthusiasm Repeated	1	1	0	0	0	2	5	
5	5A	Enthusiasm Repeated	1	1	0	0	0	2		1
	5B	Enthusiasm Repeated	1	1	1	0	0	3		
	5C	Enthusiasm Repeated	0	0	0	0	0	0		
	5D	Enthusiasm Repeated	0	0	1	0	0	1	6	
1 = Information shared 0 = No information shared										1 = Change 0 = No change



Group	Agent ID	Speaking Order	R1_Info	R2_Info	R3_Info	R4_Info	R5_Info	Info p. Person	Group Total	Opinion Change
6	6A	Enthusiasm Repeated	1	1	0	0	0	2		1
	6B	Enthusiasm Repeated	1	0	0	0	0	1		
	6C	Enthusiasm Repeated	1	1	0	0	0	2		
	6D	Enthusiasm Repeated	1	1	0	0	0	2	7	
7	7A	Enthusiasm Repeated	1	1	0	0	0	2		1
	7B	Enthusiasm Repeated	1	0	0	0	0	1		
	7C	Enthusiasm Repeated	1	1	1	0	0	3		
	7D	Enthusiasm Repeated	1	1	1	0	0	3	9	
8	8A	Enthusiasm Repeated	1	1	0	0	0	2		1
	8B	Enthusiasm Repeated	1	0	0	0	0	1		
	8C	Enthusiasm Repeated	1	1	1	0	0	3		
	8D	Enthusiasm Repeated	1	1	1	0	0	3	9	
9	9A	Enthusiasm Repeated	1	1	0	0	0	2		1
	9B	Enthusiasm Repeated	0	0	0	0	0	0		
	9C	Enthusiasm Repeated	1	1	0	0	0	2		
	9D	Enthusiasm Repeated	1	1	0	0	0	2	6	
10	10A	Enthusiasm Repeated	1	0	1	0	0	2		1
	10B	Enthusiasm Repeated	1	0	0	0	0	1		
	10C	Enthusiasm Repeated	0	1	1	0	0	2		
	10D	Enthusiasm Repeated	0	1	0	0	0	1	6	
1 = Information shared 0 = No information shared										1 = Change 0 = No change

Group	Agent ID	Speaking Order	R1_Info	R2_Info	R3_Info	R4_Info	R5_Info	Info p. Person	Group Total	Opinion Change
1	1A	Enthusiasm Once	1	-	-	-	-	-	-	0
	1B	Enthusiasm Once	0	-	-	-	-	-	-	
	1C	Enthusiasm Once	1	-	-	-	-	-	-	
	1D	Enthusiasm Once	1	-	-	-	-	-	-	
2	2A	Enthusiasm Once	1	-	-	-	-	-	-	1
	2B	Enthusiasm Once	0	-	-	-	-	-	-	
	2C	Enthusiasm Once	1	-	-	-	-	-	-	
	2D	Enthusiasm Once	1	-	-	-	-	-	-	
3	3A	Enthusiasm Once	0	-	-	-	-	-	-	0
	3B	Enthusiasm Once	0	-	-	-	-	-	-	
	3C	Enthusiasm Once	0	-	-	-	-	-	-	
	3D	Enthusiasm Once	0	-	-	-	-	-	-	
4	4A	Enthusiasm Once	1	-	-	-	-	-	-	1
	4B	Enthusiasm Once	1	-	-	-	-	-	-	
	4C	Enthusiasm Once	0	-	-	-	-	-	-	
	4D	Enthusiasm Once	0	-	-	-	-	-	-	
5	5A	Enthusiasm Once	0	-	-	-	-	-	-	0
	5B	Enthusiasm Once	1	-	-	-	-	-	-	
	5C	Enthusiasm Once	1	-	-	-	-	-	-	
	5D	Enthusiasm Once	1	-	-	-	-	-	-	
1 = Information shared 0 = No information shared										1 = Change 0 = No change

Group	Agent ID	Speaking Order	R1_Info	R2_Info	R3_Info	R4_Info	R5_Info	Info p. Person	Info Total	Opinion Change
6	6A	Enthusiasm Once	1	-	-	-	-	-	-	0
	6B	Enthusiasm Once	1	-	-	-	-	-	-	
	6C	Enthusiasm Once	1	-	-	-	-	-	-	
	6D	Enthusiasm Once	1	-	-	-	-	-	-	
7	7A	Enthusiasm Once	1	-	-	-	-	-	-	0
	7B	Enthusiasm Once	1	-	-	-	-	-	-	
	7C	Enthusiasm Once	1	-	-	-	-	-	-	
	7D	Enthusiasm Once	1	-	-	-	-	-	-	
8	8A	Enthusiasm Once	1	-	-	-	-	-	-	0
	8B	Enthusiasm Once	1	-	-	-	-	-	-	
	8C	Enthusiasm Once	1	-	-	-	-	-	-	
	8D	Enthusiasm Once	1	-	-	-	-	-	-	
9	9A	Enthusiasm Once	1	-	-	-	-	-	-	1
	9B	Enthusiasm Once	1	-	-	-	-	-	-	
	9C	Enthusiasm Once	1	-	-	-	-	-	-	
	9D	Enthusiasm Once	1	-	-	-	-	-	-	
10	10A	Enthusiasm Once	1	-	-	-	-	-	-	0
	10B	Enthusiasm Once	1	-	-	-	-	-	-	
	10C	Enthusiasm Once	1	-	-	-	-	-	-	
	10D	Enthusiasm Once	1	-	-	-	-	-	-	
1 = Information shared 0 = No information shared										1 = Change 0 = No change

### *Abstract*

Group decision-making processes are equipped with countless benefits and provide as many pitfalls. The presence of various decision makers and the combination of their respectively held knowledge, education, expertise, and information is in the position to contribute to a superior decision quality, however, collectives are often subjected to a variety of biases influencing the course of the discussion, as well as the behavior of their members. While the exchange of information between individuals and the emergence of social influence factors triggering the exertion of conformity and consensus pressures on group members has received undivided attention from many scholars of various research fields, the effects of predetermined speaking orders on the group member's willingness to share information and on the development of influential group dynamics are relatively unobserved. Therefore, this work tries to contribute to the further understanding of this research gap and experimentally observes the implications of sequential decision-making processes on course and outcome of group discussions. The results of the experiments show that a predetermined order of talking has an influential effect on the intensity of information exchange between participants and can trigger the emergence of social influence factors, consequently resulting in conformity behaviors and opinion shifts of initially dissenting group members.

## *Zusammenfassung*

Gruppenentscheidungsprozesse bringen sowohl Vor- als auch Nachteile mit sich. Das Zusammentreffen verschiedener Entscheidungsträger und deren einzigartige Kombination aus Kenntnissen, Ausbildungen, Fachwissen und Information ist in der Lage, im Vergleich zu alleinigen Entscheidungsträgern qualitativ hochwertigere Entscheidungen zu treffen. Dennoch haben Gruppen oft mit einer Vielzahl von Verzerrungen zu kämpfen, die sowohl den Verlauf der Gruppendiskussion, als auch das Verhalten der einzelnen Gruppenmitglieder beeinflussen können. Der Informationsaustausch, wie auch das Auftreten sozialer Einflussfaktoren, die oft in Konformitäts- und Konsensdruck resultieren, haben bereits die Aufmerksamkeit verschiedenster Literaturströme auf sich gezogen haben. Die Auswirkungen von festgelegten Sprechreihenfolgen auf die Bereitschaft der Teilnehmer, Wissen mit ihren Kollegen zu teilen, wie auch auf die Entwicklung von Gruppendynamiken sind jedoch noch relativ unerforscht. Sinn dieser Arbeit ist es daher, einen Beitrag zur Schließung dieser Forschungslücke zu leisten und experimentell den Einfluss sequenzieller Entscheidungsprozesse auf den Verlauf und das Ergebnis kollektiver Entscheidungsprozesse zu beobachten. Die Ergebnisse der durchgeführten Experimente zeigen, dass eine vorgegebene Gesprächsabfolge Auswirkungen auf die Intensität des Informationsaustauschs zwischen den Gruppenteilnehmern hat und dass die Entstehung von sozialen Einflüssen gefördert wird, welche wiederum zu Konformitätsverhalten und Meinungsverschiebungen von zunächst anders gesinnten Gruppenmitgliedern führt.