

NIH Public Access

Author Manuscript

Vision Res. Author manuscript; available in PMC 2008 July 1.

Published in final edited form as: Vision Res. 2007 July ; 47(16): 2187–2211.

Dynamics of saccade target selection: Race model analysis of double step and search step saccade production in human and macaque

C. R. Camalier^a, A. Gotler^a, A. Murthy^b, K.G. Thompson^c, G.D. Logan^a, T.J. Palmeri^a, and J.D. Schall^a

a Center for Integrative and Cognitive Neuroscience, Vanderbilt Vision Research Center, Department of Psychology, Vanderbilt University, Nashville, TN 37203 USA

b National Brain Research Center, Haryana, India

c National Eye Institute, Bethesda, MD, USA

Abstract

We investigated how saccade target selection by humans and macaque monkeys reacts to unexpected changes of the image. This was explored using double step and search step tasks in which a target, presented alone or as a singleton in a visual search array, steps to a different location on infrequent, random trials. We report that human and macaque monkey performance are qualitatively indistinguishable. Performance is stochastic with the probability of producing a compensated saccade to the final target location decreasing with the delay of the step. Compensated saccades to the final target location are produced with latencies relative to the step that are comparable to or less than the average latency of saccades on trials with no target step. Noncompensated errors to the initial target location are produced with latencies less than the average latency of saccades on trials with no target step. Noncompensated saccades to the initial target location are followed by corrective saccades to the final target location following an intersaccade interval that decreases with the interval between the target step and the initiation of the noncompensated saccade. We show that this pattern of results cannot be accounted for by a race between two stochastically independent processes producing the saccade to the initial target location and another process producing the saccade to the final target location. However, performance can be accounted for by a race between three stochastically independent processes – a GO process producing the saccade to the initial target location, a STOP process interrupting that GO process, and another GO process producing the saccade to the final target location. Furthermore, if the STOP process and second GO process start at the same time, then the model can account for the incidence and latency of mid-flight corrections and rapid corrective saccades. This model provides a computational account of saccade production when the image changes unexpectedly.

Keywords

saccade; race model; latency; double step; search step; decision making

Address for correspondence: Jeffrey D. Schall, Ph.D., Vanderbilt Vision Research Center, Department of Psychology, Wilson Hall, 111 21st Avenue South, Vanderbilt University, Nashville, TN 37203, (615) 343-7538 voice, (615) 343-8449 FAX, jeffrey.d.schall@vanderbilt.edu

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

1. Introduction

The double step task has been used to investigate how targets for saccades are selected and how saccade initiation is controlled by stepping the target to a new location while a saccade to the initial location is prepared but not yet executed (Aslin and Shea, 1987;Becker and Jürgens, 1979;Komoda, Festinger, Phillips, Duckman and Young, 1973;Lisberger, Fuchs, King and Evinger, 1975;Ottes, Van Gisbergen and Eggermont, 1984;Van Gisbergen, Van Opstal and Roebroek; 1987). Many studies have found that performance is stochastic and that the probability of compensating for the target step by directing gaze to the final target location decreases with the delay of the step, presumably because of the advancing commitment to shift gaze to the initial target location. Studies have also found that corrective saccades are commonly produced after errors and that the latencies of these corrective saccade are short enough to require explanation in terms of preparing the corrective saccade before the consequences of the errant saccade can be registered.

We have employed a search step variant of the double step task to investigate the neural basis of saccade target selection in macaque monkeys. In the search step task the target is presented with distractors, and the step consists of an isoluminant color change such that the initial target becomes a distractor and one of the distractors becomes the target. We have found that visually responsive neurons in the frontal eye field select the location of the stepped target even if monkeys fail to compensate and direct gaze errantly to the initial target location (Murthy, Thompson and Schall, 2001). We have also found that movement-related activity in frontal eye field producing the corrective saccade begins before the consequences of the errant saccade to the initial target location could be registered (Murthy, Ray, Shorter-Jacobi, Priddy, Schall and Thompson, 2007).

The present study had three purposes. First, we investigated how performance of the search step task differs from performance of the double step task. This was necessary because the delay of saccade latency to a target in a search array as compared to single target may change performance (Findlay and Walker, 1999;Schiller, Sandell and Maunsell, 1987). It was also necessary to determine how the well-known effects of array size and similarity between the target and distractors affect responses to the target step (Wolfe, 1998). Second, we investigated whether humans and macaque monkeys perform differently in the double step and search step tasks. This was necessary because an earlier report indicated that macaque performance was different from human (Baizer and Bender, 1989). Third, we investigated whether performance could be fit by a race model because earlier reports had suggested that this was the case but had not tested it formally (Becker and Jürgens, 1979). We found that search step and double step performance are only quantitatively different, that human and macaque monkey performance are qualitatively indistinguishable and that performance can be accounted for by a race between a GO process producing the saccade to the initial target location, a STOP process interrupting that GO process and another, ongoing GO process producing the saccade to the final target location. These results provide new insights into the computations underlying saccade target selection and the control of saccade initiation.

2. Methods

2.1. Double step and search step tasks

The double step and search step tasks were run in blocks consisting of two randomly interleaved trial types: no-step and target-step trials (Figure 1). On *no-step trials* the target remained at the location it first appeared until it was fixated through a gaze shift. On *target-step trials* the target jumped to a different location before the gaze shift to the initial location was initiated. The no-step trials were necessary to prevent monkeys and humans from waiting excessively long for

the target step. The target-step trials were necessary to investigate how the visual and saccade system respond to unexpected changes of the image during saccade preparation.

More specifically, in double step blocks the colored target appeared alone, and in search step blocks the target appeared among distractors of a uniformly different color from the target. On *no-step trials* the target appeared and remained in the same location until the saccade was made and the target was fixated for at least 400 ms. On *target-step trials*, the target stepped from its original location to a new location in the array after a variable delay, called *target step delay* (TSD). In the double step task, the target disappeared from its original location and reappeared at one of seven possible new locations. In the search step task, through an isoluminant color change the target became a distractor, and one of the distractors became a target. It is important to note that unlike other recent investigations of the effects of unexpected image changes on attention allocation and saccade production, no new stimuli appeared (e.g. van Zoest, Donk and Theeuwes, 2004).

Saccades to the final target location were referred to as *compensated saccades* (referred to by some other authors as final angle responses: Aslin and Shea, 1987;Becker and Jürgens, 1979) and were rewarded. Saccades to the initial target location were referred to as *noncompensated saccades* (referred to by some other authors as initial angle responses: Aslin and Shea, 1987;Becker and Jürgens, 1979). These were never rewarded. Noncompensated saccades were often followed by *corrective saccades* that directed gaze from the errant landing spot to the final target location. These too were never rewarded.

Target step delay was varied in a staircase fashion so that on average subjects produced an equal number of noncompensated and compensated saccades in step trials. Following compensated trials the TSD was increased. Following noncompensated trials the TSD was decreased. With each step of the staircase, TSD was increased or decreased by 47 ms for humans and 17 ms for macaques (TSDs were time-locked to a screen refresh and there were small differences in monitor refresh rates in the systems used to test humans and macaques). Accordingly, the shortest and longest TSDs did not yield as much data and so resulted in noisier data. Thus, step delays that did not amount to at least 2.5% of the total number step trials were not analyzed, leaving 4–5 step delays with sufficient data for each subject. Trials with anticipatory saccades with saccade latencies less than 50 ms were excluded from analyses.

2.2. Experimental design - humans

Three human subjects took part in 24 one-hour sessions (4 double step and 20 search step). Two of the subjects were familiar with the purpose of the experiment and one subject was naïve. The naïve subject was compensated for his time. All subjects had normal or corrected-to-normal vision. Informed consent was obtained before the experiment began and the experimental procedure was approved by the Vanderbilt University Institutional Review Board.

Each session consisted of five blocks of 96 trials, of which 40% were target-step trials. Task type (double step or search step) and target color (four possible colors) were blocked within a session. Within a search step session, the target could appear among 1, 3, or 7 distractors, yielding set sizes of 2, 4, and 8, respectively. The color similarity of the target to the distractors was also manipulated. Set size and similarity manipulations were interleaved within search step blocks. Stimuli were 1.5° squares at 9.5° eccentricity presented on a gray background (43.7 cd/m²). Four isoluminant (11.0 cd/m²) colors were used for these stimuli: green (CIE × = 291, Y = 600), gray-green (CIE × = 355 Y = 550), red (CIE × = 605 Y = 358) and gray-red (CIE × = 554, Y = 399). Humans first fixated on a black 0.5° cross which stayed on for the duration of the trial. Regardless of set size, targets were arranged with equal spacing and eccentricity about the fixation point, and orientation of the array varied between trials. On double-step

blocks, the target disappeared from one location and immediately reappeared at a new location. On search-step blocks, the target changed through an isoluminant color change to a distractor at the initial location and a distractor changed to the target at the final location. The target step was always at least 90° , so in trials with set size eight, the target never stepped to an adjacent distractor position.

Eye position was recorded with an EyeLink II tracker (SR Research) at 250 Hz temporal resolution and a stated spatial resolution of 0.01°. An eye movement was classified as a saccade if velocity exceeded 35°/s. Correct no-step and compensated trials were rewarded with a tone.

2.3. Experimental design - monkeys

Data were also collected from three adult monkeys (2 Macaca mulatta and 1 M. radiata) weighing 7–12 kg. The animals were cared for in accordance with the National Institute of Health's Guide for the Care and Use of Laboratory Animals and the guidelines of the Vanderbilt Animal Care and Use Committee. Data acquisition methods have been described elsewhere (Hanes and Schall, 1995). Monkeys were tested in 5–15 sessions of approximately 500–2000 trials each, of which 50% were step trials. Task type and target color were blocked within a session. No set size or target-distractor similarity manipulations were used. The search step task used homogeneous distractors and a chromatically dissimilar target in a set size of 8. Stimuli were 1° square stimuli at 10° eccentricity, presented on a gray background (2.0 cd/ m²). Two isoluminant (10 cd/m²) colors were used for these stimuli: red (CIE \times = 632, Y = 340) and green (CIE $\times = 279$, Y = 615). Target and distractor color were alternated across sessions. The monkeys first fixated a 0.5° white square that disappeared at target onset. Stimuli could be located at any of the vertices of an octagon centered around the fixation point. On nostep trials the target remained at its original location until it was fixated through a gaze shift. Since the behavioral data was recorded during single-unit recordings in the frontal eye field, a restricted set of targets steps was used to increase the yield of data during the neurophysiological sessions (see Murthy et al, 2007 for further detail). Targets could step to and from the three array positions centered around and the three array positions opposite to a neuron's response field, yielding 2*3*3 = 18 possible combinations of initial and final target positions. Thus, targets stepped into or out of response fields but never stepped within a response field. Target steps were randomized and were interleaved with no-steps trials in which target position was randomized and equiprobable across all locations.

Eye position was recorded with a scleral search coil. Experiments were under computer control using TEMPO/VIDEOSYNC software (Reflective Computing) that displayed visual stimuli, delivered juice, and sampled eye position at 250 Hz. An eye movement was classified as a saccade if velocity exceeded 30°/s. Correct no-step and compensated trials were rewarded with juice.

Examples of the eye movements that were produced in these tasks are shown in Figure 2. For both humans and monkeys, trials were classified as follows: On no-step trials, saccades with endpoints within 1.5° of the target were classified as correct (Figure 2A). On target-step trials, saccades with endpoints within 1.5° of the final target location were classified as compensated (Figure 2B). Those with endpoints within 1.5° of the initial target location were classified as noncompensated; these were often followed by unrewarded, corrective saccades to the final target location (Figure 2C). Infrequently, noncompensated saccades were interrupted in flight and replaced with a corrective gaze shift to the final target location (Figure 2D), or saccades were curved in the direction of the initial location (Figure 2E), these are referred to as partially compensated saccades. When a corrective saccade is present, the time between the noncompensated and corrective saccade is defined to be the *intersaccade interval* (ISI) (Figure 2C,D). *Reprocessing time* (RPT), the time available to process the target step before a

noncompensated saccade is executed, is defined to be the time between the target step and the initiation the noncompensated saccade.

2.4. Race model logic

Becker and Jürgens (1979) proposed that double step saccade performance could be understood as the outcome of a race between the processes producing saccades to the initial and final target locations. To our knowledge this has not been tested quantitatively. However, a race model has been used extensively and successfully to describe behavior in the stop signal (countermanding) task (Logan, 1994;Logan and Cowan, 1984; see also Boucher, Palmeri, Logan, and Schall, 2007) as well as in tasks requiring stopping one response and producing another (e.g., DeJong et al. 1995). To determine whether a formal race model could account for performance of the saccade double step and search step tasks, we adapted the race model originally formulated to describe performance in the stop-signal task. Performance of the saccade to the target and a process that interrupts that motor plan. Here, we investigated whether performance of double step and search step tasks can be accounted for by a race between a process producing the saccade to the initial target location and another process producing the saccade to the initial target location and another process producing the saccade to the initial target location. Alternatively, it is possible that an intervening stop process must interrupt the first saccade plan before the second saccade can be produced.

Each stochastic process is described by a unique distribution of finish times that satisfy two assumptions. First, the finish times of the respective processes are stochastically independent of one another. Second, they are contextually independent; the finish times of one process are not affected by the presence of another process. Thus, the distribution of finish times of the first process is equivalent to the distribution of no-step saccade latencies (Figure 3A and B).

This race model makes at least two specific predictions about performance in the double step and search step tasks. First, it predicts that stepping performance is a function of TSD. The compensation function plots the probability of failing to respond to the new target position (noncompensated saccade) as a function of TSD. When the target steps earlier (shorter TSD), the probability of making a noncompensated saccade is low. With increasing TSD the probability increases that subjects make an error through noncompensated saccades to the initial target location. Since an increasing proportion of the no-step distribution escape reprogramming, the longer TSD becomes, a larger proportion of noncompensated saccades will be executed at longer TSDs. Therefore the race model predicts a compensation function that increases monotonically from 0.0 when TSD is very short to approach 1.0 when TSD is very long. Examination of a subject's compensation function provides an important check on performance; a bias or lack of sensitivity to the target step will result in a flat compensation function (Logan and Cowan, 1984).

Second, as TSDs get longer, an increasing proportion of the no-step distribution escapes reprogramming. This leads to distributions of noncompensated saccade latencies that incorporate an increasing fraction of the distribution of no-step saccade latencies. Thus, the race model predicts that with increasing TSD the distribution of noncompensated saccade latencies will progressively approach the distribution of no-step trial saccade latencies. Violations of stochastic independence of the finish times in the race model are revealed by departures from this prediction (e.g., Band, van der Molen and Logan, 2003;Logan, Cowan and Davis, 1984;Osman et al. 1986). In particular, if the racing processes inhibit each other, then noncompensated saccade latencies would be longer than no-step saccade latencies. This is observed very rarely (but see Hanes and Carpenter, 1999;Colonius, Özyurt and Arndt, 2001;Özyurt, Colonius and Arndt 2003).

Accounting for double-step saccade performance in terms of a race between GO and STOP processes affords a theoretical bridge to the well-known race model applied to stop signal task performance (Logan and Cowan, 1984;Logan 1994). The race model of countermanding performance provides a measure of the duration of the inhibition process referred to as *stop signal reaction time*. Conceptually and mathematically, TSRT corresponds to stop signal reaction time. Therefore, the methods used to estimate stop signal reaction time can be used as well to measure TSRT (Logan and Cowan, 1984;Logan, 1994;Hanes and Schall, 1995).

According to the race model applied to the double step saccade task, performance on a targetstep trial is determined by the outcome of a race between the process producing the saccade to the original target location and the process(es) interrupting that saccade and producing the saccade to the final target location. Two aspects of the behavioral performance data were used to estimate TSRT. The first is the distribution of saccade latencies collected on no step trials; this is the distribution of finish times of the first GO process (figure 3). The second is the fraction of noncompensated trials for each target step delay. Referred to as the compensation function, this is the fraction of trials in which the first GO process finished before the STOP process finished. We used two methods to estimate TSRT for each session. First and most simply, according to Logan and Cowan (1984), mean TSRT equals the difference between the mean saccade latency during no step trials and the mean of the compensation function. The mean of the compensation function is determined by treating the compensation function as a cumulative distribution and converting it to a probability density distribution. The mean of the compensation function is simply the mean of this probability density distribution.

The second method provides an estimate of the TSRT at each stop-signal delay. By this method TSRT is estimated by integrating the distribution of latencies on no step trials, beginning at the time of target presentation, until the integral equals the proportion of noncompensated saccades observed at that target step delay. The saccade latency at the integrated value yielding the appropriate fraction of noncompensated trials measures the finish time of the race, i.e., the longest saccade latency in which the GO process could finish before the deadline imposed by the STOP process for that stop-signal delay. Thus, the time between the appearance of the target step and this deadline represents the TSRT at this target step delay. In practice, TSRT is determined by first rank ordering the no step trial saccade latencies. The *i*th saccade latency is then chosen, where *i* is determined by multiplying the probability of a noncompensated trial at a given target step delay multiplied by the total number of no step trials. The TSRT is the difference between the *i*th saccade latency and the target step delay.

The TSRT estimated using the mean of the compensation function and by integrating the no step trial saccade latency distribution can vary somewhat. Further, the TSRT estimated with data from early or late target step delays can be unreliable (Hanes and Schall 1995). Therefore, we believe the most reliable overall estimate of TSRT for a session is the average of the TSRT derived from both methods.

We analyzed the patterns of behavior from both search and double step tasks to determine whether performance could be explained in terms of an independent race model.

3. Results

3.1. Effects of search and target-distractor similarity on saccade latency

Before evaluating whether performance conforms to the predictions of the race model and testing alternative race model architectures, we must first describe the effects of the experimental manipulations. We compared the latencies of saccades produced in blocks of double step trials in which the target appeared alone to the latencies of saccades produced in blocks of search step trials in which the target appeared with distractors. Human subjects were

also tested with different search array set sizes with distractors that were more or less similar to the singleton target. Figure 4 compares for each human and monkey subject the mean latencies of no-step trial saccades, noncompensated saccades, and compensated saccades in blocks of double step and search step trials. As compensated saccades are made in response to the target step, the latencies of compensated saccades were measured relative to TSD. The latencies were submitted to a 2 (species - macaque or human) \times 2 (task type - double step or search step) \times 3 (type of trial - no step, compensated or noncompensated) mixed design (between- and within-subject effects) repeated measures univariate ANOVA; for this and all subsequent tests, statistical significance was determined using an alpha level of p < .05. Several trends were significant. First, there was a within-subject main effect of the presence of distractors on saccade latency (F(1, 4) = 9.804, MSE = 10167). We also found a significant interaction of distractor presence and species (F(1,4) = 10.164, MSE = 10540); in other words, it appeared the monkeys and humans exhibited different patterns of saccade latencies when the target was presented alone or with distractors, but we believe this is incidental. All human subjects and two of the three monkeys exhibited saccade latencies during search step that were systematically longer than those in double step. Second, overall human and macaque performance was not significantly different; there was no significant between-subject main effect of species (F(1, 4) = 1.642, p = 0.269, MSE = 9557). Third, individual differences were evident in the monkeys' performance. One monkey (F) exhibited no difference in saccade latencies in double step and search step blocks (2 (task type) × 3 (response type) mixed design (between- and within-session effects) repeated measures univariate ANOVA F(1,40 = 0.096,MSE = 224630, p = 0.75), and another monkey (L) exhibited significantly longer saccade latencies during double step as compared to search step blocks (F(1,40 = 77.6, MSE = 112124)). The monkeys probably delayed saccade initiation when the target appeared without distractors because, unlike humans, they had been trained to perform memory-guided saccades to a target presented alone. Fourth, there was a within-subject main effect of the type of trial (F(2, 8) =9.804 MSE = 10874). Specifically, the latencies of noncompensated saccades were less than the latencies of saccades in no-step trials, and the latencies of compensated saccades measured relative to the target step were less than the latencies of saccades on no-step trials.

Figure 5 compares for each human subject the mean latencies of no-step trial saccades, noncompensated saccades and compensated saccades as a function of set size (2, 4, 8) and target-distractor similarity. The latencies were submitted to a 2 (similarity) \times 3 (set size) \times 3 (type of trial - no step, compensated or noncompensated) between-subject repeated measures univariate ANOVA. Several results were evident. First, saccade latencies were elevated when the target and distractors were more similar in color (2 (similarity) \times 3 (set size) \times 3 (response type) repeated measures univariate ANOVA subject CC: F(1,19) = 39.9, MSE = 61490; subject LB: F(1,19) = 17.6, MSE = 37587; subject SS: F(1,19) = 26.5, MSE = 163527). Second, though, there was not a significant overall effect of set size (F(2,4) = 0.87, MSE = 710, p = 0.918), target-distractor similarity (F(2,4) = 5.701, MSE = 4431, p = 0.140) nor a significant interaction of set size and target-distractor similarity (F(2,4) = 1.769, MSE = 595, p = 0.282). One of the three subjects exhibited a significant elevation of saccade latency with set size when the target was similar to distractors but not when they were dissimilar (subject CC: F(2,19) = 16.8, MSE = 25965). Third, there was a significant main effect of response type (F(2,4) = 9.719, MSE = 2922); saccade latencies in compensated and noncompensated trials were significantly shorter than those in no-step trials. This was the case for all three subjects (subject CC: F(2,19) = 22.0, MSE = 34023; subject LB: F(2,19) = 28.7, MSE = 61448; subject SS: F(2,19) = 33.8, MSE = 209253). Thus, saccade latencies were elevated when the target and distractors were more similar in color, but no consistent effect of set size on reaction time was present

3.2. Target step performance: comparison to race model predictions

The race model applies to data of a particular form; in other words, it entails certain requirements about the quality of performance. In particular, the race model predicts a monotonically increasing compensation function as a function of TSD. Also, the independence of the racing processes predicts that the latencies of noncompensated saccades must not exceed the latencies of no-step trials saccades. This section will demonstrate that the performance of humans and monkeys performing both double step and search step conforms to these predictions. Performance of a representative human subject 'SS' will be used for illustration, and the results for all subjects and conditions are detailed in Table 1.

Figure 6 shows the compensation function for this subject's double step performance. As expected, the probability of not compensating for the target step increased monotonically from close to 0.0 at the shortest TSD toward 1.0 at the longest TSD.

To compare the distributions of noncompensated saccade latencies with the predictions of the race model, Figure 7A plots the cumulative distributions of noncompensated saccade latencies produced following four TSDs along with the cumulative distribution of saccade latencies in no-step trials for this representative subject. Two trends are characteristic of the data from all subjects, both human and monkey. First, the latencies of noncompensated saccades are shorter than the latencies of no-step trial saccades. Second, noncompensated saccades produced at shorter TSDs had shorter latencies than those produced at longer TSDs.

A fundamental motivation of the description of these data in terms of an independent race between the process producing the saccade to the initial target location and a process interrupting that saccade plan is the observation that noncompensated saccade latencies rarely if ever exceed no-step saccade latencies. If noncompensated saccade latencies routinely exceeded no-step saccade latencies, this would be evidence that the processes responding to the target step slowed the process producing the initial saccade. Such an interaction would violate the fundamental assumption of stochastic independence of the finish times of the racing processes (Colonius et al., 2001). To carry out the most sensitive test possible for such violations, we performed a Kolmorogoff-Smirnoff test to assess whether the noncompensated saccade latency distribution was significantly different from the no-step saccade latency distribution. Figure 7B illustrates the results of this analysis for all 27 double step and search step sessions of both monkeys and humans. Each point plots the difference between the nostep and noncompensated latency cumulative distributions at each TSD. To evaluate the difference between the distributions, the measure was defined to be the mean difference of the values at their respective quintiles. In a given session, there is one noncompensated distribution per TSD, and lines between the points connect data from the same session. These points are filled if the noncompensated distribution was significantly different from the no-step distribution according to a Kolmorogoff-Smirnoff test, and are not filled otherwise.

Out of 101 target step delays, in only three delays across three different sessions were the latencies of noncompensated saccades significantly longer than those in no-step trials; this occurred in three different subjects. The fact that the overwhelming majority of noncompensated saccade latencies do not exceed no-step saccade latencies provides convincing evidence of stochastic independence, establishing the basis for applying a race model analysis of the data. As further evidence of the independence of these processes, the few violations occur only at the longest TSD. If the processes interacted, one would expect greater delays for noncompensated saccade latencies at the shortest TSD, because the processes have the longest time to interact. Instead, these few noncompensated delays occurred only at the longest step delays, which is not consistent with interacting processes. Thus, the latencies of noncompensated error saccades correspond to what is predicted if they are the outcome of a race between processes producing the alternative saccades.

3.3. Target step reaction time

As previously discussed, application of the race model to stepping performance affords a measurement of the time taken to cancel the first saccade in order to produce the compensated saccade. This perspective on these data and analysis are motivated by the application of the race model to characterize performance in stop signal tasks by stop signal reaction time (Logan and Cowan 1984). In parallel, we define the time to interrupt the incomplete motor program in response to the target step as *target step reaction time* (TSRT). This quantity is determined as described in Methods. We now analyze whether TSRT was different in double step as opposed to search step blocks and whether TSRT is affected by search array set size or targetdistractor similarity. Figure 8A plots mean TSRT for double step and search step performance for monkeys and humans. TSRT was ~40 ms longer during search step blocks as compared to double step blocks for both humans and monkeys. A 2 (task type) \times 2 (species) repeated measures mixed design (within- and between-subject effects) ANOVA demonstrated a significant within-subject effect of the presence of distractors (F(1,2) = 30.544, MSE = 4236). However, TSRT did not differ between humans and macaques (F(1,4) = 0.498, MSE = 61, p = 0.519). Figure 8B shows mean TSRT for humans performing search step with different set sizes and target-distractor similarity. TSRT was significantly longer in trials with similar target and distractors than in trials with dissimilar target and distractors (F(1,2) = 1057.917, MSE = 22400), but TSRT did not change with set size (F(2,4) = 0.545, MSE = 112, p = 0.617).

We found that TSRT measured by the method of integration decreased with TSD (data not shown). This is observed commonly in measurement of stop signal reaction time. While it may be an indication that the independence premise of the race model is violated, it is most likely due to the sampling from the no-step trial saccade latency distribution (Logan and Cowan, 1984;Band et al. 2003).

3.4. Compensated saccade latencies

Earlier research reported a ~30 ms delay of compensated saccade latencies on step trials measured relative to the target step, as compared to the latencies of saccades on no-step trials (Aslin and Shea, 1987;Becker and Jürgens, 1979). This difference was interpreted as evidence for a cost entailed by canceling the saccade to the initial target location before the saccade to the final target location could be prepared. Figure 9A compares the distributions of latencies of compensated saccades at four TSDs with those observed in no-step trials measured from the time of initial array presentation. Because compensated saccades are responses to the target step, their latencies measured relative to target presentation increase with TSD. However, because the compensated saccades are made in response to the target step, one can compare their latencies with no-step saccade latencies by subtracting TSD from the compensated latencies (Figure 9B). For this subject, compensated saccades to the final target location occur with latencies markedly less than those of no-step saccades.

To see if this trend is consistent across subjects, Figure 9C shows results of a comparison of compensated saccade latencies (with TSD subtracted) and no-step saccade latencies for each TSD from all human and monkey double step and search step sessions. Again, each point plots the difference between the latency of no-step trial saccades and the latency of compensated trial saccades relative to the target step, measured as the mean difference at their quintiles as a function of TSD. Lines connect points from the same subject and condition. For this analysis, we are interested in a delay measured as a difference of the central tendencies (means) of the distributions, so a t-test was used to determine if the means were significantly different from each other. Solid points indicate a significant difference and empty points indicate a non-significant difference. Points less than zero indicate a delay of the compensated saccade step and entry to no-step saccade latencies.

Out of 101 delays, only four TSDs over four different sessions yielded data in which compensated saccades were produced with latencies significantly greater than the no-step distribution; these occurred across three different subjects, reducing further the sense of any trend. In general, then, compensated saccades when measured from the time of the step, had latencies significantly shorter than those observed in no-step trials. This absence of a delay, consistently seen across task types and species, suggests that there may be insufficient time for an explicit stopping process to occur before beginning the preparation of the second saccade.

3.5. Corrective saccades

Another feature of saccade production in the double step and search step tasks is the occurrence of corrective saccades after noncompensated errors (e.g., Becker and Jürgens, 1979). In fact, many investigators use double step target presentation to investigate how the visuomotor system performs coordinate transformations to accomplish these corrective saccades (e.g., Colby and Goldberg, 1999;Andersen and Buneo, 2002). We were more interested in determining the incidence, timecourse, and latencies of these corrective saccades. Becker and Jürgens (1979) showed that the interval between error and corrective saccades in a double step task varied with the latency of the first saccade relative to the target step. In this interval the visual system could update its representation of the image to identify the new target location, but once the first saccade was initiated, visual processing could not continue. The longer this interval (that is, the longer the latency of the error saccade to the initial target location), the more time was available to locate the new target. Accordingly, if an error was made, then the more time available to process the target step, the earlier the error could be corrected. In fact, this is just what has been observed. The time between the initial noncompensated saccade and the corrective saccade will be referred to as the intersaccade interval (ISI). Previous work has demonstrated that ISI is a function of the interval between the initiation of the noncompensated saccade and the target step (Becker and Jürgens, 1979). We refer to the interval between the initiation of the noncompensated saccade and the target step as *reprocessing time* because it is the period of time available for a target that stepped to the new location to be reprocessed (Becker and Jürgens, 1979).

Figure 10 plots the intersaccade interval between the noncompensated saccades and subsequent corrective saccades as a function of reprocessing time for a representative subject. Most of the noncompensated saccades terminated at the initial target location and were followed by corrective saccades that were produced earlier with respect to the start of the noncompensated saccade the later the noncompensated saccade was initiated after the target step. In other words, ISI decreases as noncompensated saccade latency increases. The few noncompensated trials that did not culminate in a corrective saccade were from the human hard search condition in which the subject simply failed to locate the target. A few of the noncompensated saccades, called partial compensated saccades, were interrupted mid-flight and had amplitudes less than the distance to the initial target location (Figure 10B); these may have curved trajectories. These tended to be observed at the longest reprocessing time and were always followed by corrective saccades to the final target location and these were initiated an unusually short time after the noncompensated saccade. A significant negative correlation between ISI and RPT was observed in nearly all sessions for noncompensated saccades for both human and monkey, for double step and search step regardless of set size or target-distractor similarity (Table 2). These observations indicate that the corrective saccade was prepared in parallel with the noncompensated saccade or at least that the corrective saccades can be produced in much less time than typical saccade latencies (Murthy et al., 2007).

3.6.1 Fitting race models to data—So far, we have shown that human and macaque production of saccades in double step and search step tasks is consistent with the predictions of an independent race model. In fact, the data obtained from monkeys and humans performing

double step and search step saccades replicates in major respects what has been collected in earlier studies of human performance. It has been suggested that such data can be described as the outcome of a race between competing processes (Becker and Jürgens, 1979), but this has not been tested formally. Also, the nature of this reprogramming process is still unclear. On the one hand, the race has been conceived of as occurring between the two processes producing the alternative saccades to the initial and final target location. On the other hand, a delay of compensated saccades relative to no-step saccade latencies has been taken as evidence for a stopping process (Aslin and Shea, 1987;Becker and Jürgens, 1979). Yet, in our data no such delay was observed. In fact, we observed for most humans and macaques systematically shorter latencies of compensated saccades relative to the step. Therefore, through quantitative model fitting we have tested whether double step and search step performance can be accounted for by a race between independent processes, and what processes must participate in that race.

Figure 11 diagrams the three alternative architectures we analyzed. The tips of the arrows in figure 11 represent the finish times of the processes. The first architecture is simply a race between the process producing the saccade to the initial target location (GO1) and the process producing the saccade to the final target location (GO2), so this will be referred to as the *GO-GO* architecture. GO1 starts when the target appears, and GO2 starts when the target steps. It is well-known that an architecture like this will result in latencies in step trials that are shorter than those in no-step trials (Townsend and Ashby, 1983). The fact that both noncompensated and compensated saccades had latencies less than the no-step saccade latencies suggests that this architecture may be sufficient to account for the observed data.

Alternatively, the previous evidence for a cost associated with producing compensated saccades (Aslin and Shea, 1987;Becker and Jürgens, 1979) suggests that a STOP process must be included that interrupts the GO1 process and delays initiation of the second saccade. We investigated two architectures that included a STOP process. In the first, STOP must interrupt the GO1 process before the GO2 process can begin; this will be referred to as the *GO-STOP-GO* architecture. In the second architecture, the GO2 process began synchronously with the STOP process; this will be referred to as the *GO-GO+STOP* architecture.

To evaluate these three architectures, we quantitatively fitted Monte Carlo simulations of these architectures to the data collected from the individual monkeys and humans. First, the finish times of each racing process were drawn from independent Weibull distributions. These finish times were taken as the saccade latency which would include all afferent and efferent delays. The Weibull distribution was chosen because it is easily parameterized and provides a good account of observed saccade latency distributions (Becker, 1989;Van Zandt, 2000). The Weibull distributions were defined by three parameters according to the following equation:

$$f(x) = \frac{\alpha}{\beta} * \left(\frac{x-\mu}{\beta}\right)^{\alpha-1} * e^{-\left(\frac{x-\mu}{\beta}\right)^{\alpha}}$$

The shape parameter (α) affects the shape of the distribution of finish times, ranging from exponential for $\alpha < 1$ to nearly Gaussian with increasing magnitude of α . The scale parameter (β) largely affects the variability of the distribution of finish times. The positive location parameter (μ) shifts the lower bound of the distribution away from zero. For modeling data from each human and monkey, we allowed the GO1, GO2, and STOP Weibull distributions to have different shape, scale, and location parameter values.

We modeled the no-step condition and each of the target-step conditions using a Monte Carlo simulation with 50,000 trials per condition. On each simulated trial, finish times were sampled from the GO1 Weibull distribution, the GO2 Weibull distribution, and the STOP Weibull distribution (for the two architectures that assumed a STOP process). We denote a particular finish time sampled from the GO1 Weibull distribution as *go1*, from GO2 as *go2*, and from

STOP as *stop*. From these sampled finish times, the predicted response (compensated or noncompensated) and saccade latency on that trial were generated for different architectures using the rules described in the next paragraph. For all architectures, the distribution of latencies in no-step trials was simply the finish times of the GO1 process alone, consistent with the race model assumption of contextual independence.

In the GO-GO architecture, noncompensated saccades were produced when GO1 was less than TSD + GO2, and compensated saccades were produced when TSD + GO2 was less than GO1. In the GO-STOP-GO architecture, noncompensated saccades were produced when TSD + STOP was less than TSD + STOP and compensated saccades were produced when TSD + STOP was less than GO1. In the GO-STOP-GO architecture, the saccade latency on a compensated saccade was equal to TSD + STOP + GO2. For the GO-GO+STOP and was also less than TSD + GO2. Compensated saccades were produced when TSD + STOP and was also less than TSD + GO2. Compensated saccades were produced when TSD + STOP was less than GO1 or TSD + GO2 was less than GO1. For the GO-GO+STEP architecture, the saccade latency on a compensated saccade was equal to TSD + GO2.

Collating all of the individual trials from these Monte Carlo simulations produced a predicted saccade latency distribution for the no-step condition and predicted saccade latency distributions for compensated and noncompensated saccades in each target step condition (as well as a predicted compensation function relating the proportion of compensated and noncompensated saccades at each TSD). Our aim was to find Weibull parameters for GO1, GO2, and STOP that minimized the difference between predicted and observed saccade latency distributions. These distributions contained both the latencies, and frequencies of saccades, so this process also fits the compensation function.

We followed an approach to fitting models to saccade latency data recommended by Ratcliff and Tuerlinckx (2002). Specifically, we searched for parameters that minimized the lack of fit between model predictions and observed data as measured by a Pearson chi-square statistic (χ^2), defined by:

$$\chi^{2} = \sum_{i} \sum_{j} \frac{(obs_{ij} - prd_{ij})^{2}}{prd_{ij}}$$

The first summation over *i* indexes over the conditions in the experiment (i.e., no-step condition and the various target step conditions corresponding to the different values of TSD). In keeping with the standard use of a χ^2 statistic, within each condition a particular observed (*obs*) or predicted (prd) trial can have one of a discrete number of possible outcomes indexed over j. The χ^2 statistic compares the predicted frequency of each possible outcome (*obs_{ij}*) with the observed frequency of each possible outcome (prdii). On no-step trials, an observation could fall into one of six latency bins defined by the 10th, 30th, 50th, 70th, and 90th percentiles, and a model prediction could also fall into one of those six defined latency bins. Similarly, on target-step trials, an observation could fall into one of six latency bins defined by the cumulative latency distribution for compensated saccades or into one of six latency bins for noncompensated saccades; a model prediction could also fall into one of those defined latency bins depending on whether the predicted trial was compensated or noncompensated. For model predictions, the 50,000 simulated trials were used to generate the predicted *proportion* of trials falling into each latency bin and then these were converted into a predicted frequency of trials falling into each latency bin for each condition (see Tuerlinckx, 2004) for additional details on this procedure). Note that the compensation function is not fitted explicitly because the proportion of compensated versus noncompensated trials at each TSD is given by the distributions of finish times directly.

We independently fit predicted responses from each of the three model architectures to data from each subject and task condition. Best-fitting parameters were found by minimizing the χ^2 fit statistic using the subplex gradient descent optimization routine (Bogacz and Cohen, 2004;Rowan, 1990). This is an extension of the well-known simplex method (Nelder and Mead, 1965) that is well-suited for searching parameter spaces of stochastic models. Each parameter search was started from at least 40 randomly generated starting positions in order to avoid the possibility of settling into a local minimum in parameter space. All parameter searches were run on a parallel computer cluster consisting of several hundred dual-processor Linux systems supported by the Vanderbilt Advanced Computing Center for Research and Education.

3.6.2 Race model fits to primary saccade—Figure 12 compares the best-fitting performance of each model architecture in accounting for the data obtained in double step trials from one representative human subject. The figure displays the Weibull distributions for the component processes of the model architecture, observed and predicted compensation function, and observed and predicted cumulative latency distributions for noncompensated and compensated trials along with the no-step cumulative latency distributions. It is clear that the simplest model consisting of a race between two GO processes, the GO-GO architecture, did not fit the data very well for this subject. In contrast, the GO-STOP-GO and the GO-GO+STOP architectures fit the saccade latency distributions and reproduced the compensation function very well for this subject. Note that the GO2 distribution is earlier in the GO-STOP-GO architecture (Figure 12). Both architectures produce equivalent predictions because in the GO-STOP-GO architecture, the GO2 process is required to start later, after the STOP process finishes.

This pattern of best fitting architectures was obtained for all subjects performing both double step and search step tasks under all conditions (Table 3). In all cases, the GO-GO architecture produced fits that were substantially worse than both the GO-STOP-GO and GO-STOP+GO architectures as assessed by Akaike's Information Criterion (AIC) statistic (Akaike, 1973). Figure 13 shows scatterplots of predicted versus observed mean saccade latencies in no-step, noncompensated, and compensated trials, averaged across TSD to show how these alternative architectures accounted for each of the 27 data sets (6 double step and 21 search step across all subjects). The GO-GO architecture systematically overestimated the latencies of saccades in no-step and noncompensated trials. In contrast, both architectures with the STOP process produced excellent predictions of mean saccade latency in each kind of trial.

3.6.3 Race model account of target step reaction time—By instantiating a particular implementation of a stopping process, the GO-STOP-GO and GO-STOP+GO models can provide insights into what is measured by TSRT. Recall that TSRT measures the time needed to interrupt the planning of the first saccade. We calculated TSRT from the latency distributions and compensation functions produced by the model fit to each data set; this predicted TSRT was compared to the TSRT measured from the observed data (Figure 14). It is clear that the TSRT predicted by the models that included a STOP process agrees very well with the observed TSRT (Figure 14A,B). This is really just a reflection of the fact that the GO-STOP-GO and GO-GO+STOP architectures fit the saccade latencies and probability of saccade production so well.

The quality of this agreement permits us to explore in more mechanistic terms what TSRT measures. In general, if TSRT measures the time needed to interrupt the preparation of the first saccade, then TSRT should correspond to some measure of the finish time of the STOP process. On the one hand, TSRT could measure the mean of the distribution of all finish times of the STOP process (i.e., the expected value of STOP, E(STOP)). However, this would entail that STOP processes that outlast GO1 could influence TSRT which is logically impossible. Therefore, alternatively, TSRT could measure the mean of only those finish times for which

the STOP process finished before GO1 (i.e., E(STOP | STOP < GO1)). Figure 14 illustrates scatterplots of these two measures of STOP finish time as a function of TSRT derived from the model fits to each data set. This plot supports several conclusions. First, although TSRT varies with distractor presence and similarity to the target (Figure 8), there was generally very good agreement between the two measures of STOP finish time and TSRT. Second, for both architectures E(STOP) slightly overestimated the TSRT derived from the simulated data TSRT, and E(STOP | STOP < GO1) slightly underestimated TSRT. These deviations were significant as determined by t-tests testing whether the distribution of the differences between respective distributions were significantly different from 0 for the GO-STOP-GO architecture (t(26) = 3.61; t(26) = -6.19, for E(STOP) and E(STOP | *stop* < *go1*) respectively), and the GO-GO +STOP architecture (t(26) = 3.47; t(26) = -6.47, respectively). At the same time, these deviations were very small in absolute value, owing most likely to the small variability of STOP process finish times. Therefore, we conclude that TSRT provides a useful measure of the finish time of the STOP process, but the precise value depends on statistical sampling.

3.6.4 Race model fits to corrective saccade—According to the fits to the production of the primary saccade, whether it is a correct compensated saccade or an errant noncompensated saccade, the GO-STOP-GO and GO-GO+STOP architectures mimic one another. However, we found that another line of evidence can distinguish between them. The latency of corrective saccades can be derived from the model by assuming that the finish time of the GO2 sample following the GO1 sample is the initiation time of a corrective saccade to the final target location. Moreover, partial compensated saccades could occur if GO1 finishes before GO2 both of which finishing before STOP; in other words, the stop process is too slow to interrupt the saccade produced by GO1 but GO2 finishes early enough to affect the execution of the saccade in flight.

Figure 15 shows the predicted interval between noncompensated and corrective saccades as a function of the delay from the step until the noncompensated saccade is initiated (reprocessing time) for both the GO-STOP-GO and the GO-GO+STOP architectures with parameters from a representative subject. The general form of these plots resembles the observed data (Figure 10); however, on closer inspection diagnostic differences are evident. First, the GO-STOP-GO architecture by design cannot produce corrective saccades with latencies less than the finish time of the earliest STOP process because GO2 cannot start before STOP has finished. Therefore, intersaccade intervals less than the duration of the STOP process cannot occur. Second, the GO-STOP-GO architecture by design cannot start before STOP is finished. In contrast, GO1 and GO2 can finish before STOP, albeit infrequently, in the GO-GO+STOP architecture (Figure 15C). Thus, the GO-GO+STOP but not the GO-STOP-GO architecture can account for the observations of intersaccade intervals less than ~60 ms as well as mid-flight corrections.

In the data collected from humans, mid-flight corrections were observed in 5.0 ± 1.8 (min = 2.6, max = 10.3) percent of trials. Assuming that mid-flight corrections occur when GO1 finishes 0 to 50 ms (assuming a 50 ms saccade duration) before GO2 with both finishing before STOP, then the GO-STOP-GO architecture predicted no mid-flight corrections because GO2 could not start until GO1 was stopped. However, across the range of best-fit parameters the GO-GO+STOP architecture predicted mid-flight corrections in 2.2 ± 2.7 (min = 0.0, max = 9.1) percent of trials. In the model fits, the range of predicted mid-flight corrections could be accounted for by the delay of STOP relative to the delay of GO1; in other words, if the best-fit STOP process happened to be slow, then this permitted more time for GO1 and GO2 to finish first. Although the model accounted for the overall percentage of mid-flight corrections, the variability in incidence observed across subjects and conditions could not be accounted for entirely by the model. Nevertheless, the close quantitative agreement between observed and predicted incidence of mid-flight corrections is further evidence that the GO-GO+STOP

architecture provides the best account of saccade production when the target can step to new locations.

4. Discussion

We investigated saccade target selection in humans and macaque monkeys in tasks in which a target stepped to a different location on random trials. Most testing was done with visual search displays in which the target step amounted to an isoluminant color change. However, to relate these data to the existing literature, testing was also done with a conventional double step procedure in which the target step was the disappearance of the target at its original location and simultaneous appearance at another location. In these double and search step trials, we found that macaque monkey performance is not qualitatively different from human performance of these tasks. We found that performance was stochastic and followed characteristic regularities. First, the probability of producing a compensated saccade to the final target location decreased with the delay of the step. Second, compensated saccades in response to the step were produced with latencies that tended to be shorter than the average latency of saccades on trials with no target step. Third, noncompensated saccades to the initial target location were produced with latencies less than the average latency of saccades on trials with no target step. Fourth, noncompensated errors to the initial target location were routinely followed by corrective saccades to the final target location with an intersaccade interval that tended to decrease with the latency of the noncompensated saccade relative to the target step (reprocessing time).

We also tested formally whether this pattern of results could be accounted for by different race model architectures. We found that the performance could not be accounted for by a race between just two stochastically independent GO processes producing the saccades to the initial or final target location. However, performance was accounted for by a race between three processes – a GO process producing the saccade to the initial target location, a STOP process interrupting that GO process, and a GO process producing the saccade to the final target location. Furthermore, if the STOP process and second GO process start at the same time then the model can account for the incidence and latency of mid-flight corrections and rapid corrective saccades. These results provide new information about the dynamics of saccade target selection and validate a particular computational account of saccade production.

4.1 Comparison of macaque and human performance

Contrary to previous accounts that report monkeys were unable to perform double step tasks (Baizer and Bender, 1989), we found that humans and monkeys demonstrated qualitatively similar performance on these tasks. The differences between the two studies may be due to an innate difference in species used in the two studies; the previous experiment used *Macaca fasicularis* and this study used *M. mulatta* and *M. radiata*. In the previous study it is unclear that the monkeys were sensitive to the stimulus contingencies because they also did not exhibit the well known fixation-target gap effect on saccade latency.

In our study, monkey and human performance was qualitatively indistinguishable in both double step and search step conditions. Although the set size and distractor similarity manipulations were not applied to monkeys in this study, previous work demonstrates that monkeys exhibit the same sensitivity to target target-distractor similarity as humans (e.g., Bichot and Schall, 1999;Sato and Schall, 2001;Sato, Watanabe, Thompson and Schall, 2003;Shen and Pare, 2006).

4.2 Comparison of search step with double step performance

The latencies of saccades to targets are elevated if the target is presented with distractors (Findlay, 1987;Schiller et al., 1987). We replicated this with human and monkeys, but the slowing of saccade latency by the presence of distractors was less pronounced in monkeys than in humans. We believe this difference is because the monkeys (but not the humans) were also trained to perform a memory-guided saccade task with the target presented alone. Thus, the monkeys did not initiate saccades as quickly as they might when the target appeared alone because they had more experience waiting for the fixation spot to disappear.

One of the major findings of this study is that, in spite of this difference, the overall pattern of performance in target step trials was not qualitatively different if the target appeared and stepped with or without distractors (see also Sheliga et al. 2002). In other words, subjects could respond to a target that unexpectedly changed location through a strong luminance decrement at the old location and an increment at the new location as well as to a target that changed location through an isoluminant color change at the old and new locations. Previous studies have investigated attention allocation and target selection when new stimuli are added to a search array (e.g., Godijn and Theeuwes, 2002;Theeuwes, 1991;Theeuwes, Kramer, Hahn and Irwin, 1998). Our results indicate that more subtle changes of the image can guide attention and gaze as well.

To investigate the sensitivity of target selection to the isoluminant color change, we manipulated target-distractor similarity in humans. Unfortunately, the manipulation was only marginally successful because the distractors were not similar enough to increase the display size effect for every subject. Further work is needed with more complex visual search arrays, such as targets defined by spatial configuration.

Another major finding of this study was the longer latency to react to the step in search step as compared to double step trials, as measured by TSRT. TSRT was even longer when the target and distractors were similar in color. At least two explanations can be conceived for these effects on TSRT. First, it is possible that the independence premise of the race model formulation is violated; TSRT could have been longer in the more difficult search trials because the stop process competed for resources with the go process. An alternative interpretation is that the stepped target was not as salient when presented in a search array as when presented alone and was even less salient when the target and distractor were more similar. This would introduce a longer delay in the sensory processing preceding the stop process.

The estimation of TSRT depends on the validity of the race model formulation. Some reports have provided evidence that the independence premise of the race model can be violated (e.g., Hanes and Carpenter, 1999;Özyurt, Colonius and Arndt, 2003). To examine this, we determined on a per-session basis whether noncompensated saccades were produced with latencies longer than the latencies of no step trials saccades. Because we found such violations in only three sessions and in only three target step delays of those sessions we conclude that the performance in this task is consistent with what is expected of a race.

Previous research has interpreted a delay in the saccade latencies of compensated saccades relative to no-step saccade latencies as evidence that an intervening cancellation of the first saccade must occur before a saccade to the final target location can be initiated (Becker and Jürgens, 1979). However, we have seen little evidence of this delay in both human and macaque performance in these tasks, indicating that there might not be enough time for an explicit STOP process to intervene. This difference could be due to differences in the experimental design between the two experiments. For example, in the present experiment, the target either remained at its initial location or stepped to another location at an equivalent eccentricity from the fixation point. In Becker and Jürgens' experiment the target stepped in more ways in

amplitude and direction along the horizontal meridian, away from the central point, toward the central point and across the midline. Given the executive control that can be exerted in double step saccade performance (Ray et al. 2004) it is possible that the diversity of target steps used by Becker and Jürgens resulted in a general slowing of performance.

4.3 What does target step reaction time measure?

One of the utilities of the modeling results was the ability to measure explicitly certain previously unobservable intervals, such as TSRT, the time taken to interrupt the first planned saccade. Though not explicitly fit, TSRT corresponds remarkably well with the average latency of the STOP process. The challenge of measuring the duration of stochastic processes leaves an open question whether TSRT is a measure of the overall average latency of the STOP process or is a measure of the average latency of just those STOP process instances that actually interrupted the first GO process. This distinction is difficult to make because of the low variability inherent in the distributions of the STOP process and while of theoretical interest may not be of much practical value.

4.4 Race models of double step saccade performance

Becker and Jürgens (1979) suggested that double step saccade production could be explained as the outcome of a race between processes producing the alternative saccades; however, this has never been tested formally until now. We analyzed these data according to the same logical framework as has been applied to stop signal data (Logan and Cowan, 1984). The compensation function corresponds to the inhibition function. Noncompensated saccades correspond to signal-respond (also known as non-canceled) saccades. Finally, compensated saccades correspond to signal-inhibit (also known as canceled) trials. The countermanding race model has been successfully applied to stop signal and change signal task performance (e.g., Colonius et al., 2001;De Jong, Coles, Logan and Gratton, 1990;Logan and Burkell, 1986).

A recent paper by Ludwig, Mildinhall and Gilchrist (2006) describes a stochastic accumulator model of double-step saccade performance. This model included the following characteristics: saccade direction is coded by pools of units with broad movement fields; the presentation of a target results in increased activation of the unit centered on the target location with progressively less activation in neighbouring units; the activation of each unit corresponds to evidence in favor of the target being in its response field; the activation of each unit is subject to leakage such that if the target steps out of the movement field, activation passively decays; a saccade is generated to the location coded by the unit with activation that reaches a specific threshold; the latency of the saccade is determined by the time that the threshold is reached plus a constant efferent delay; the rate of accumulation varies randomly across target onsets and within a trial; the within-trial noise is independent across units. This model could account for major features of the data including the production of averaging saccades. While this model is probably correct in many respects, it has the following shortcomings. First, the model parameters were not optimized to individual data sets. Second, the model was not shown to fit the range of error and correct saccade latencies. Third, the reduction of activation exclusively through leakage is not sufficient to account for the latency of saccades and pattern of neural modulation if double-step performance is accomplished by the same circuitry that accomplishes saccade countermanding (Boucher et al. 2007). Finally, evidence in support of one model architecture was provided, but alternative architectures were not excluded.

A major goal of this study was to evaluate different architectures of the race model and in particular to gain an insight into the nature of the stopping process. For every data set examined, the best-fitting model included a STOP process that interrupted preparation of the first saccade. We also explored how this STOP process related to the second GO process that produced the saccade to the final target location. One logical possibility is that the second GO process (GO2)

begins only after STOP finishes by interrupting GO1; we refer to this as the GO-STOP-GO architecture. Another logical possibility is that GO2 starts at the same time as STOP; we refer to this as the GO-GO+STOP architecture.

Both of these architectures fit the distributions of latencies of no step, noncompensated and compensated saccades and replicated the compensation function. However, the two architectures make different predictions about the distributions of finish times of the processes that prepare the first (GO1) and second saccade (GO2). In the GO-STOP-GO model the latencies of GO2 are much shorter than those of GO1. In fact, the GO2 latencies are so short as to be physiologically implausible. On the view that GO1 and GO2 are just different manifestations of the same process, this marked difference suggests that the sequential processing inherent in the GO-STOP-GO architecture may not be a viable alternative. However, the GO-GO+STOP architecture fit to the data sets also produced GO2 latencies that were systematically shorter than those of GO1. This was necessary to fit the compensated saccade latencies that were shorter than the no step trial saccade latencies for most subjects. Evidently, under the conditions used in our study there was a facilitation of saccade programming on target step trials.

The GO-STOP-GO and GO-GO+STOP architectures could be distinguished quite clearly when examining the incidence and latency of corrective saccades produced after noncompensated saccades. Noncompensated saccades were produced if GO1 finished first. In such trials we could sample a GO2 finish time, and we found that the interval between GO2 (corrective) and GO1 (noncompensated) tended to decrease with the latency of GO1 relative to the step (reprocessing time) (Figure 15). However, due to its sequential design the GO-STOP-GO architecture could not produce intersaccade intervals less than the duration of the STOP process. In contrast, due to the parallel activation of GO2 and STOP in the GO-GO +STOP architecture, it was possible to produce very short intersaccade intervals. In fact, it was possible for the GO-GO+STOP architecture to produce some trials in which GO1 finishes before GO2 that both finish before STOP. Such rare occurrences may be seen as mid-flight corrections in which the second saccade command follows on the heels of the first without any period of fixation.

A number of investigators have described saccades with curved trajectories when multiple targets are presented (e.g., McPeek, Han and Keller, 2003;Minken, Van Opstal and Van Gisbergen, 1993;Port and Wurtz, 2003). All studies agree that such curved saccade mid-flight corrections are rare. Models have been developed to account for the curvature of mid-flight corrections (e.g., Quaia, Lefevre and Optican 1999;Arai and Keller, 2005;Walton, Sparks and Gandhi, 2005;Goossens and Van Opstal, 2006). Our model provides an account of the premotor mechanisms that explain the frequency and latency of such movements.

Therefore, we believe that the GO-GO+STOP architecture is the most plausible account of how the primate brain produces saccades. This conclusion has two implications. First, it demonstrates how concurrent saccade preparation can occur in a controlled fashion. Second, the fact that GO2 and STOP occur at the same time suggests that they may in fact be the same process.

Acknowledgements

The authors wish to thank Hari Kannan and Daniel Shima for programming support, Leanne Boucher and Stephanie Shorter-Jacobi for helpful discussions and the referees for useful comments on the manuscript. This work was supported by T32-MH064913, NSF-BCS0218507, RO1-EY08890, Robin and Richard Patton and center grants P30-EY08126 and P30-HD015052.

References

- Akaike, H. 2nd International Symposium on Information Theory. Budapest: 1973. Information theory and an extension of the maximum likelihood principle; p. 267-281.
- Andersen RA, Buneo CA. Intentional maps in posterior parietal cortex. Annu Rev Neurosci 2002;25:189– 220. [PubMed: 12052908]
- Arai K, Keller EL. A model of the saccade-generating system that accounts for trajectory variations produced by competing visual stimuli. Biol Cybern 2005;92:21–37. [PubMed: 15650897]
- Aslin RN, Shea SL. The amplitude and angle of saccades to double-step target displacements. Vision Res 1987;27:1925–1942. [PubMed: 3447347]
- Baizer JS, Bender DB. Comparison of saccadic eye movements in humans and macaques to single-step and double-step target movements. Vision Res 1989;29:485–495. [PubMed: 2781737]
- Band GP, van der Molen MW, Logan GD. Horse-race model simulations of the stop-signal procedure. Acta Psychol (Amst) 2003;112:105–142. [PubMed: 12521663]
- Becker, W. Metrics. In: Wurtz, RH.; Goldberg, ME., editors. Neurobiology of Saccadic Eye Movements. Amsterdam: Elsevier; 1989. p. 13-67.
- Becker W, Jürgens R. An analysis of the saccadic system by means of double step stimuli. Vision Research 1979;19:967–983. [PubMed: 532123]
- Bichot NP, Schall JD. Saccade target selection in macaque during feature and conjunction visual search. Vis Neurosci 1999;16:81–89. [PubMed: 10022480]
- Bogacz R, Cohen JD. Parameterization of connectionist models. Behav Res Methods Instrum Comput 2004;36:732–741. [PubMed: 15641419]
- Boucher L, Palmeri TJ, Logan GD, Schall JD. Inhibitory control in mind and brain: An interactive race model of countermanding saccades. Psychol Rev. 2007
- Colby CL, Goldberg ME. Space and attention in parietal cortex. Annu Rev Neurosci 1999;22:319–49. [PubMed: 10202542]
- Colonius H, Özyurt J, Arndt PA. Countermanding saccades with auditory stop signals: testing the race model. Vision Res 2001;41:1951–1968. [PubMed: 11412886]
- De Jong R, Coles MG, Logan GD, Gratton G. In search of the point of no return: the control of response processes. J Exp Psychol Hum Percept Perform 1990;16:164–182. [PubMed: 2137517]
- Findlay JM. Visual computation and saccadic eye movements: a theoretical perspective. Spat Vis 1987;2:175–189. [PubMed: 3154944]
- Findlay JM, Walker R. A model of saccade generation based on parallel processing and competitive inhibition. Behav Brain Sci 1999;22:661–674. [PubMed: 11301526]
- Godijn R, Theeuwes J. Programming of endogenous and exogenous saccades: evidence for a competitive integration model. J Exp Psychol Hum Percept Perform 2002;28:1039–1054. [PubMed: 12421054]
- Goossens HH, Van Opstal AJ. Dynamic ensemble coding of saccades in the monkey superior colliculus. J Neurophysiol 2006;95:2326–2341. [PubMed: 16371452]
- Hanes DP, Carpenter RH. Countermanding saccades in humans. Vision Res 1999;39:2777–2791. [PubMed: 10492837]
- Hanes DP, Patterson WF 2nd, Schall JD. Role of frontal eye fields in countermanding saccades: visual, movement, and fixation activity. J Neurophysiol 1998;79:817–834. [PubMed: 9463444]
- Hanes DP, Schall JD. Countermanding saccades in macaque. Vis Neurosci 1995;12:929–937. [PubMed: 8924416]
- Komoda MK, Festinger L, Phillips LJ, Duckman RH, Young RA. Some observations concerning saccadic eye movements. Vision Res 1973;13:1009–1020. [PubMed: 4713916]
- Li CS, Andersen RA. Inactivation of macaque lateral intraparietal area delays initiation of the second saccade predominantly from contralesional eye positions in a double-saccade task. Exp Brain Res 2001;137:45–57. [PubMed: 11310171]
- Lisberger SG, Fuchs AF, King WM, Evinger LC. Effect of mean reaction time on saccadic responses to two-step stimuli with horizontal and vertical components. Vision Res 1975;15:1021–1025. [PubMed: 1166598]

- Logan G, Burkell J. Dependence and independence in responding to double stimulation: a comparison of stop, change, and dual-task paradigms. Journal of Experimental Psychology: Human Perception and Performance 1986;12:549–563.
- Logan, GD. On the ability to inhibit thought and action: A user's guide to the stop signal paradigm. In: Dagenbach, D.; Carr, T., editors. Inhibitory Processes in Attention, Memory, and Language. San Diego: Academic Press; 1994.
- Logan GD, Cowan WB. On the ability to inhibit thought and action: A theory of an act of control. Psychological Review 1984;91:295–327.
- Logan GD, Cowan WB, Davis KA. On the ability to inhibit simple and choice reaction time responses: a model and a method. J Exp Psychol Hum Percept Perform 1984;10:276–291. [PubMed: 6232345]
- Ludwig CJ, Mildinhall JW, Gilchrist ID. A population coding account for systematic variation in saccadic dead time. J Neurophysiol 2006;97:795–805. [PubMed: 17108094]
- McPeek RM, Han JH, Keller EL. Competition between saccade goals in the superior colliculus produces saccade curvature. J Neurophysiol 2003;89:2577–2590. [PubMed: 12611995]
- Minken AW, Van Opstal AJ, Van Gisbergen JA. Three-dimensional analysis of strongly curved saccades elicited by double-step stimuli. Exp Brain Res 1993;93:521–533. [PubMed: 8519341]
- Murthy A, Ray S, Shorter-Jacobi SM, Priddy EG, Schall JD, Thompson KG. Frontal eye field contributions to rapid corrective saccades. J Neurophysiology 2007;97:1457–1469.
- Nelder JA, Mead R. A Simplex Method for Function Minimization. The Computer Journal 1965;7:308–313.
- Osman A, Kornblum S, Meyer DE. The point of no return in choice reaction time: controlled and ballistic stages of response preparation. J Exp Psychol Hum Percept Perform 1986;12:243–258. [PubMed: 2943853]
- Ottes FP, Van Gisbergen JA, Eggermont JJ. Metrics of saccade responses to visual double stimuli: two different modes. Vision Res 1984;24:1169–1179. [PubMed: 6523740]
- Özyurt J, Colonius H, Arndt PA. Countermanding saccades: evidence against independent processing of go and stop signals. Percept Psychophys 2003;65:420–428. [PubMed: 12785072]
- Quaia C, Lefevre P, Optican LM. Model of the control of saccades by superior colliculus and cerebellum. J Neurophysiol 1999;82:999–1018. [PubMed: 10444693]
- Port NL, Wurtz RH. Sequential activity of simultaneously recorded neurons in the superior colliculus during curved saccades. J Neurophysiol 2003;90:1887–1903. [PubMed: 12966180]
- Ratcliff R, Tuerlinckx F. Estimations parameters of the diffusion model: Approaches to dealing with contaminant reaction times and parameter variability. Psychonomic Bulletin and Review 2002;9:438–481. [PubMed: 12412886]
- Ray S, Schall JD, Murthy A. Programming of double-step saccade sequences: modulation by cognitive control. Vision Res 2004;44:2707–2718. [PubMed: 15358065]
- Rowan, T. Functional Stability Analysis of Numerical Algorithms. Austin: University of Texas at Austin; 1990.
- Sato T, Schall JD. Pre-excitatory pause in frontal eye field responses. Exp Brain Res 2001;139:53–58. [PubMed: 11482843]
- Sato TR, Watanabe K, Thompson KG, Schall JD. Effect of target-distractor similarity on FEF visual selection in the absence of the target. Exp Brain Res 2003;151:356–363. [PubMed: 12802550]
- Schiller PH, Sandell JH, Maunsell JH. The effect of frontal eye field and superior colliculus lesions on saccadic latencies in the rhesus monkey. J Neurophysiol 1987;57:1033–1049. [PubMed: 3585453]
- Sheliga BM, Brown VJ, Miles FA. Voluntary saccadic eye movements in humans studied with a doublecue paradigm. Vision Res 2002;42:1897–1915. [PubMed: 12128020]
- Shen K, Pare M. Guidance of eye movements during visual conjunction search: local and global contextual effects on target discriminability. J Neurophysiol 2006;95:2845–2855. [PubMed: 16467428]
- Theeuwes J. Exogenous and Endogenous Control of Attention the Effect of Visual Onsets and Offsets. Perception and Psychophysics 1991;49:83–90. [PubMed: 2011456]
- Theeuwes J, Kramer AF, Hahn S, Irwin DE. Our eyes do not always go where we want them to go: Capture of the eyes by new objects. Psychological Science 1998;9:379–385.

- Townsend, JT.; Ashby, FG. Stochastic modeling of elementary psychological processes. Cambridge: Cambridge University Press; 1983.
- Van Gisbergen, JA.; Van Opstal, AJ.; Roebroek, JGH. Stimulus-induced midflight modification of saccade trajectories. In: O'Regan, JK.; Lévy-Schoen, A., editors. Eye movements: from physiology to cognition. Dourdan, France: Elsevier; 1987. p. 27-36.
- Van Zandt T. How to fit a response time distribution. Psychonomic Bulletin and Review 2000;7:424–465. [PubMed: 11082851]
- van Zoest W, Donk M, Theeuwes J. The role of stimulus-driven and goal-driven control in saccadic visual selection. J Exp Psychol Hum Percept Perform 2004;30:746–759. [PubMed: 15305440]
- Walton MM, Sparks DL, Gandhi NJ. Simulations of saccade curvature by models that place superior colliculus upstream from the local feedback loop. J Neurophysiol 2005;93:2354–2358. [PubMed: 15615826]

Wolfe JM. What can 1 million trials tell us about visual search. Psychological Science 1998;9:33-39.



Figure 1.

Double step (A) and search step (B) tasks. All trials began after fixation of the central spot with presentation of the colored target at one of 2, 4 or 8 locations without (A) or with (B) differently colored distractors. No-step trials conclude after gaze shifted to the target for a specified interval. In target-step trials, after a delay (*TSD*) the target stepped to another of the 2, 4 or 8 positions. Two responses were possible, indicated by arrows. *Compensated saccades* were gaze shifts to the final target location. *Noncompensated saccades* were gaze shifts to the initial target location. Noncompensated saccades were commonly followed by a *corrective saccade* to the new target position.

Camalier et al.



Figure 2.

Responses on representative trials from a human search step session. Open boxes indicate target location in no-step trials and final target location in step trials. Filled boxes are distractors. A box around a distractor marks the initial target location. Horizontal (black) and vertical (gray) eye velocity (upper) and vectorial eye velocity (lower) are plotted relative to target presentation time on the graphs beneath the sample displays. Vertical gray lines mark the times of saccade initiation. Vertical black lines mark target step time. Reprocessing time interval (RPT) and intersaccade interval (ISI) between noncompensated and corrective saccades are indicated. A. Example correct no-step saccade. B. Example compensated saccade. C. Example noncompensated saccade followed by a corrective saccade. D. Example partial noncompensated saccade interrupted by a corrective saccade. E. Example midflight correction of noncompensated saccade.



Figure 3.

Relationship between saccade latency and probability of compensating for target step. A. Probability density distribution of latencies of saccades in no-step trials. B. Cumulative distribution of latencies of correct saccades in no-step trials (solid) and of errant noncompensated saccades (dashed). C. Inhibition function plots probability of not compensating for the target step as a function of target step delay. At the earliest target step delay (50 ms, solid vertical line in A, B), the subject failed to compensate for the target step on almost 30% of trials (horizontal arrows in B, C). The key observation motivating the race model is that these errors are produced with the shortest saccade latencies (dashed plot in B). In other words, noncompensated errors are those saccades produced with latencies shorter than

the latency of a process that would interrupt the process producing the saccade to the initial target location. The duration of the interruption process can be estimated by determining the latency less than which the fraction of saccade latencies corresponds to the probability of noncompensated saccades at each target step delay. This interval is the target step reaction time (TSRT) (dashed vertical line in A, B).



Figure 4.

Mean latencies of no-step (A, B), noncompensated (C, D), and compensated (E, F) saccades for individual human and macaque subjects as a function of double step or search step blocks. Compensated saccade latencies are measured relative to the target step. Line types for each subject indicated in legend. Error bars are within-subject 95% confidence intervals.



Figure 5.

Mean latency of no-step (A–C), noncompensated (D–F), and compensated (G–I) saccades as a function of set size (x axis) and target-distractor similarity (individual lines). Black lines indicate less similar target distractor colors; gray lines indicate similar distractor colors. Line types for subjects are the same as Figure 4. Error bars are within-subject 95% confidence intervals.



Figure 6. Compensation function for a representative human subject performing the double step task.



Figure 7.

Analysis of noncompensated saccade latencies. A. Comparison of cumulative distributions of latencies of no-step (black) and noncompensated saccades (gray) produced following successively longer TSDs for a representative human subject performing the double step task. Noncompensated saccade latencies are as short as the shortest no-step latencies and increase progressively with TSD. B. The race model predicts that the latencies of all noncompensated saccades will be less than the latencies of no-step trial saccades. Mean quintile difference between no-step and noncompensated saccade latency distributions plotted as a function of TSD for all data sets collected from both macaques and humans. Positive values indicate sessions in which the noncompensated saccade latencies were faster than no-step saccade latencies. Lines connect TSDs for the same session, where solid lines indicate human and dotted indicate monkey data. Solid circles indicate a difference that was significant according to a Kolomorogov-Smirnoff test (p < 0.05); empty circles indicate non-significant differences. Only three noncompensated saccade latency distributions were faster than the no-step saccade latency distributions (highlighted by the arrows); these all occur at the longest TSDs sampled in a session



Figure 8.

Effects of manipulations on TSRT. A. TSRT for humans and monkeys as a function of presence of distractors in search step compared to double step. B. TSRT for humans as a function of search array size and target-distractor similarity. Error bars are average within-subject 95% confidence intervals. TSRT is longer when distractors are present and longer still when they resemble the target.

NIH-PA Author Manuscript



Figure 9.

Analysis of compensated saccade latencies. A. Comparison of cumulative distributions of latencies of no-step (black) and compensated saccades (gray) produced following successively longer TSDs for a representative human subject performing the double step task. The top panel plots compensated saccade latencies relative to initial presentation of the target. B. Cumulative distributions of compensated saccade latencies measured relative to the target step. Relative to the initial presentation of the target step, compensated saccade latencies have a common distribution that for this subject is shorter than that of no-step saccades. C. Mean quintile difference between distributions of no-step saccade latencies and distributions of compensated

saccade latencies relative to the target step as a function of TSD for all data sets collected with both macaques and humans. Positive values indicate sessions in which the compensated saccade latencies relative to the target step were faster than no-step saccade latencies. Lines connect TSDs for the same session, where solid lines indicate human and dotted indicate monkey data. . Solid circles indicate a difference that was significant according to a t-test; empty circles indicate non-significant differences. Only four compensated saccade latency distributions were slower than the no-step saccade latency distributions (highlighted by the arrows); these tend to occur at the shortest TSDs sampled in a session.



Figure 10.

Analysis of corrective saccade latencies. Top diagram illustrates sequence of events in a representative noncompensated trial. The interval between noncompensated saccades and subsequent corrective saccade (referred to as *intersaccade interval: ISI*) is plotted as a function of the interval from target step until initiation of the noncompensated saccade (referred to as *reprocessing time: RPT*) for complete (A) and partial (B) noncompensated saccades. For reference, marginal distribution shows density of no-step saccade latencies. Horizontal line shows the first percentile of no-step responses.



Figure 11.

Alternative race architectures producing noncompensated (left) and compensated (right) saccades. The arrows are representative finish times of stochastic processes as labeled. **A.** GO-GO architecture. Performance is the outcome of a race between the GO process producing the saccade to the initial target location (GO1) and the GO process producing the saccade to the final target location (GO2). **B.** GO-STOP-GO architecture. Compensated saccades are produced only if a STOP process finishes before the GO process producing the saccade to the initial target location (GO1) whereupon the GO process producing the saccade to the final target location (GO2) begins. **C.** GO-GO-STOP architecture. Compensated saccades are produced only if a STOP process finishes before the GO process producing the saccade to the initial target location (GO1), but the GO process producing the saccade to the initial target location (GO1), but the GO process producing the saccade to the initial target location (GO1), but the GO process producing the saccade to the final target location (GO1) begins at the same time as the STOP process. This creates the possibility of GO2 finishing after GO 1 but before STOP.



Figure 12.

Fits to representative data of the GO-GO architecture (left column), GO-STOP-GO architecture (middle column) and GO-GO+STOP architecture (right column). Top panels illustrate density distributions if finish times of the model processes as indicated by the legend. Second panels compare observed (solid) and predicted (dotted) compensation functions. Third panels compare observed and predicted cumulative distributions of no-step trial and noncompensated saccade latencies. Fourth panels compare observed and predicted saccade latencies. For this data set only architectures including a STOP process fit the data.



Figure 13.

Summary of fits to mean latency of no-step saccades (top row), noncompensated saccades (middle row) and compensated saccades (bottom row) of predicted means for the GO-GO architecture (left column), GO-STOP-GO architecture (middle column) and GO-GO+STOP architecture (right column). For all data sets only architectures including a STOP process fit the data. Gray symbols show data from monkeys; black, from humans. Crosses show data from double step sessions. Filled circles show data from search step with dissimilar target and distractor; open circles, search step with similar target and distractor.



Figure 14.

Target step reaction time. A,B. Comparison of observed TSRT to model TSRT for GO-STOP-GO (left) and GO-GO+STOP (right) architectures. C,D. Comparison of average finish times of the STOP process on all trials (E(STOP)) to model TSRT. E,F Comparison of average finish times of those STOP processes that finished before the first GO process (E(STOP | stop $< g_0$)). Conventions as in Figure 13.



Figure 15.

Relation of interval between noncompensated and corrective saccades to reprocessing time in data simulated from the sequential (A) and simultaneous (B–C) architectures. Marginal distribution plots latencies of saccades on no-step trials. The sequential architecture does not permit the second GO process to finish after the first but before the STOP process, but this can occur for the simultaneous architecture. The simulated partial noncompensated saccades (because GO1 finished) are rare but are followed very rapidly by corrective saccades (because GO2 finished). Solid horizontal line denotes the first percentile of no-step responses. Black dashed horizontal line is TSRT. Gray dashed horizontal line is the fastest finish time of the STOP processes occurring in the simulation.

Table 1

Measures of observed and predicted behavior for all subjects and conditions. Rows list each task by species, subject and search condition, further divided by step delay. Columns from left to right are chi-squared model fit values for the three competing architectures, step delay, observed and predicted values of the compensation function, observed and predicted average latencies (measured from the time of array presentation) for no step, noncompensated and compensated saccades, and observed and predicted TSRT, with finish times of the process interrupting the first GO process for each architecture.

Tak	ole	•			_			_					_							_			_				_	_		_	_		
						χ2			%	Nonco	mpen	sated	No	-step	later	ncy	Noncom	pensate	ed lat.	Co	ompen	sated	lat.	TSRT		GO-GO	ŝ	GO-	STOP	-60	G0-	GO+S	TOP
sk type	cies	ject	rch type	size	60	STOP-GO	GO+STOP		erved	60	STOP-GO	GO+STOP	erved	GO	STOP-GO	GO+STOP	erved GO	STOP-GO	GO+STOP	erved	60	STOP-GO	GO+STOP	erved	E	rop)	rop stop < GO	E	rop)	rop stop < GO	E	rop)	TOP STOP < GC
Ta	Spe	Sub	Sea	Set	<u>6</u>	<u>6</u>	ġ	12	qo	ġ	<u>6</u>	60	ops	69	ġ	<u>6</u>	GO.	60	<u>6</u>	ops	<u>6</u>	<u>6</u>	GO.	obs	TSF	E(S	E(S	TSF	E(S)	E(S	TSF	E(S)	E(S
		ch			1564	225	215	67	0.19	0.66	0.35	0.35	194	254	193	192	171 192	176	175	271	263	271	266	95	182	598	196	102	112	82	101	108	74
			n/a	n/a				100	0.46	0.75	0.60	0.58					182 202	178	179	299	296	297	299										
		fc	-		7993	498	471	117	0.64	0.78	0.72	0.70	213	285	213	212	178 207	181	181	323	313 300	312	316	74	181	594	199	82	83	75	82	83	7
				æ				117	0.28	0.72	0.40	0.40					183 221	183	183	314	317	324	323		100000			-					
	onke		2	2				134	0.41	0.75	0.56	0.57					189 226 198 230	189 195	189 195	340	333 349	340 355	340 356										
	Ŵ	hi			2469	452	444	167	0.55	0.81	0.81	0.82	204	404	204	202	205 235	201	201	387	366	370	373	70	222	051	240	04	04	76	02	04	- 7
		'y			3400	400	441	184	0.33	0.68	0.38	0.28	304	404	304	303	256 299	252	252	426	424	437	434	12	223	001	240	34	34	70	93	34	1
			e/a	e/a				200	0.33	0.71	0.47	0.48					258 303	260	260	448	440	452	450										
step			-	-				234	0.41	0.75	0.65	0.65					272 313	270	270	498	474	484	484										
	_	cc	-		690	65	67	251	0.56	0.77	0.72	0.73	202	233	200	200	284 317	276	275	244	491 236	239	238	96	187	515	187	93	96	94	94	97	g
				_				94	0.46	0.77	0.43	0.44					154 198	158	160	285	282	286	285								20		
1			2	'n				141	0.78	0.88	0.78	0.78					185 211 201 220	182 195	182 195	333	328	331 377	332 380										
	E	LB			668	74	76	94	0.32	0.62	0.17	0.18	257	293	251	251	163 221	167	171	300	297	305	302	94	201	168	202	90	90	83	91	92	8
	Hum		n/a	n/a				141	0.42	0.74	0.41	0.41					192 238 217 252	216	216	402	343 389	349 394	349 397										
		SS	<u> </u>		806	70	69	235	0.77	0.89	0.85	0.86	277	310	275	274	240 263	233	234	462	435	438	443 286	115	181	2357	191	108	104	99	107	104	0
				_	000	10	00	136	0.35	0.67	0.26	0.25		010	210	2.1.4	217 263	218	216	331	328	335	333		101	LUUI	101	100	104	00	107	101	
			2	è				183	0.60	0.81	0.59	0.59					239 279 269 290	245 264	244 263	385 433	373 418	379 422	380 428										
[ał	ala	1 (con	tin	hou																												
	JIE				ucu																												
u	JIE	., .			leu	χ2			% 1	Nonco	mpens	sated	No	-step	later	ncy	Noncomp	ensate	d lat.	Co	mpen	sated	lat.	TSRT		GO-GO		GO-	STOP	-G0	GO-0	30+S	тор
I GL	JIC	., .			leu	χ2			% 1	Nonco	mpens	sated	No	-step	later	ncy	Noncomp	ensate	d lat.	Co	mpen	sated	lat.	TSRT	2	GO-GO	< GO)	GO-	STOP	< GO) &	GO-0	30+S	TOP v CO) v
5	016	., .				х2 09	do.		% 1	Nonco	mpens	sated	No	-step	later	dO	Noncomp	oensate O	ed lat.	Co	ompen	sated O	lat.	TSRT		60-60	TOP < GO)	GO-	STOP	TOP < GO) 6	GO-0	30+S	TOP < GO) Q
type	s	5	h type	e	0	ZQP-GO	0+STOP		ved %	Nonco	mpen: 09-d0J	sated dOLS+O	ved	-step	later 09-d0J	0+STOP	Noncomp	oensate O O O O O	d lat.	ved boy	ompen	sated 09-dOJ	lat. dOLS+0	TSRT Per	2	60-60 (d	0P STOP < GO)	GO-	STOP	P STOP < GO) 🖗	GO-0	64 64	P STOP < GO)
ask type	pecies	subject	search type	iet size	09-00	so-stop-go X	SO-GO+STOP	as.	Dbserved %	Nonco 09-05	30-STOP-GO	sated dOLS+09-05	Dbserved	-step 09-05	later 09-d0LS-05	SO-GO+STOP 6	Noncomp 90-60	oensate 09-d0LS-05	d lat. d01S+09-05	Dbserved O	ompen 09-06	sated 09-dOLS-05	lat. dots+09-09	TSRT povesq	SRT	(STOP) 00	(STOP STOP < GO)	SRT 00	(STOP) OTS	(STOP STOP < GO) 0	SRT 00	e(stop)	(STOP STOP < GO)
I ask type	Species	2 Subject	r Search type	∞ Set size	09-09 7766	X ² 09-05-00 772	00-60+STOP	USD	% Poperved	Nonco 09-09 0.60	09-4015-09 0.25	doLS+09-09 0.30	No perved 215	09-09-09-09-274	09-d015-09 216	do12+09-09	Noncomp 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	OS-dOLS-OS 199	d lat. d01S+09-09 199	Co pavasqO 271	09-09-09-09-09-09-09-09-09-09-09-09-09-0	o9-d015-09 274	lat. dOLS+09-09 265	TSRT persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persection persec	TSRT 204	GO-GO (actob) 843	E(STOP STOP < GO)	GO- Last 128	(AOTS) 133	E(STOP STOP < GO)	GO-0	30+S (actor) 133	© E(STOP STOP < GO)
lask type	Species	Subject	imilar Search type	∞ Set size	09-09 7766	X ² 09-4015-09 772	00-60+STOP	OS1 50 67 84	Peviesgo 0.20 0.30 0.38	0900 0.60 0.66 0.71	05-d015-05 0.25 0.34 0.46	dols+09-09 0.30 0.38 0.47	No pavasdO 212	09 09 09 274	09-d015-09 216	dOLS+09-09 213	Noncomp 09 09 09 09 09 09 196 207 199 212 203 218	09-d0LS-09 199 200 200	d lat. dots+09-09 199 201 202	Co pavasqO 271 283 297	09-09 261 278 295	09-d015-09 274 287 299	lat. dOLS+09-09 265 282 299	TSRT pennesqo 124	TSRT 204	GO-GO (dots)a 843	E(STOP STOP < GO)	GO	STOP E(STOP) 133	0 E(STOP STOP < GO)	GO-G	E(STOP)	© E(STOP STOP < GO)
lask type	Species	Subject	disimilar Search type	∞ Set size	09 09 09 09 09 7766	X ² 09-d015-09 772	00-60+STOP	OSL 50 67 84 100	% Pervesqo 0.20 0.30 0.38 0.45	0900 0.60 0.71 0.74	09-d015-09 0.25 0.34 0.46 0.58 0.70	doLS+09-09 0.30 0.38 0.47 0.56	No ppserved 215	09 09 274	09-d015-09 216	dots+09-09 213	Noncomp 90 196 207 199 212 203 218 203 222 207 222	09-d0LS-09 200 200 202 204	d lat. dOLS+09-05 199 201 202 203 204	Co parasdo 271 283 297 313 297	09-09 261 278 295 310 227	09-d015-09 274 287 299 312 226	do15+09-09 265 282 299 315 232	TSRT perses	1321	60-60 (aots) 843	E(STOP STOP < GO)	GO-	E(STOP)	00 E(STOP STOP < GO) 00	GO-0	E(STOP)	8 E(STOP STOP < GO)
Task type	Species	a Subject	disimilar Search type	& Set size	99 99 7766	X ² 09-d0LS-09 772	401S+09-05 500	OSL 50 67 84 100 117 50	Paraset 0.20 0.30 0.38 0.45 0.53 0.31	0900 0.60 0.66 0.71 0.74 0.78 0.58	09rd015r09 0.25 0.34 0.46 0.58 0.70 0.33	dols+09-09 0.30 0.38 0.47 0.56 0.65 0.34	Perved 215 225	09 09 274 283	09-d015-09 216	do15+09-09 213	Noncomp 9 09 09 196 207 199 212 203 212 203 212 207 226 197 207	09-40 199 200 202 204 198	d lat. d015+09-09 201 202 203 204 197	Co ppriesto 271 283 297 313 333 275	0900 261 278 295 310 327 257	09-d015-09 274 287 299 312 326 275	dolls+09-09 265 282 299 315 332 264	TSRT polosgo 124	204	(dots) 843	E(STOP STOP < GO)	GO-: 128	(dots) 133 143	00 E(STOP STOP < GO) 00	GO-G 126	(HOLD) 133 156	8 E(STOP STOP < GO) 9
Task type	Species	a Subject	ar disimilar Search type	α Set size	09-09 7766	X2 09-d015-09 7772 873	401S+09-05 500	GSL 50 67 84 100 117 50 67 84	% Percession 0.20 0.20 0.30 0.38 0.45 0.53 0.31 0.37 0.40	0,60 0.66 0.71 0.74 0.58 0.58 0.68	09-d015-00 0.25 0.34 0.46 0.58 0.70 0.33 0.41 0.50	dOLS+09-09 0.30 0.38 0.47 0.565 0.34 0.34 0.34	No 215 225	•step 09 09 274 283	09-401-5-09 216	do1\$+09-09 213	Noncomp 900 09 09 196 207 199 212 203 222 207 226 197 207 197 212 199 212	09-d0L5-09 200 200 202 204 198 200 202	d lat. dots+09-09 201 202 203 204 197 200 203	Co portest 271 283 297 313 333 275 285 285	0900 261 278 295 310 327 257 275 292	O9-d0LS-09 274 287 299 312 326 275 287 299	dots+09-05 265 282 299 315 332 264 281 299	TSRT ponuesq0 124	204 205	(HOLS) 843	E(STOP STOP < GO)	GO	(dots)a 133	G (00 > 401 STOP < GO) G 103	GO-G 126	(dots) 133	8 E(STOP STOP < GO) Q
lask type	Species	by Subject	similar disimilar Search type	∞ 8et size	09.09 7766 5287	X2 09-d0LS-09 772	dOLS+09-09 500	OSL 50 67 84 100 117 50 67 84 100	% P 0.20 0.30 0.38 0.45 0.53 0.31 0.37 0.40 0.45	9 9 0 .60 0.66 0.71 0.74 0.78 0.68 0.63 0.68 0.72	09-d0LS:09 0.25 0.34 0.46 0.58 0.70 0.33 0.41 0.50 0.59	dOLS+09-05 0.30 0.38 0.47 0.56 0.65 0.34 0.42 0.50 0.57	Perlesgo 215	•step 09 09 274 283	09-d015-09 216	4015+09-09 213	Noncomp 196 207 199 212 203 212 207 226 197 207 199 217 207 212 199 217 200 221	09-d015-009 199 200 200 202 204 198 200 202 204	d lat. do15+09-00 199 201 202 203 204 197 200 203 203 205	Co paries go 2711 283 297 313 333 297 285 296 309	09.09 261 278 295 310 327 257 275 292 308	097-d01500 2774 2877 2999 312 2275 2877 2999 311	lat. dOLS+09-09 265 282 299 315 332 264 281 298 314	тякт реллезедо 124 124	204 205	(dous) 843	211 E(STOP STOP < GO)	GO-1 128	(dOLS)3 133	G (00 > 4015 4015 103	GO-G	(dots) 133	8 E(STOP STOP < GO)
lask type	species 3	ch subject	disimilar disimilar Search type	α Set size	9909 77766	X2 09-4015-09 772	dots+09-09 500	OSL 50 67 84 100 117 50 67 84 100 117 134	940 940 940 940 940 940 940 940	O O O O O O O O O O	O 9-d015-005 0.25 0.34 0.46 0.58 0.70 0.33 0.41 0.50 0.59 0.67 0.75	a d 0 5 0 0 0 0 0 0 0 0 0 0	раллазар 215 225	-step 9 9 274 283	09-4015-09 216	4015+09-09 213 225	Noncomp 96 00 196 207 199 212 203 218 203 228 207 226 197 207 197 212 199 217 200 221 208 226 216 230	09-d015-009 199 200 200 202 204 198 200 202 204 202 204 206 208	d lat. d0L5+009-00 199 201 202 203 204 197 200 203 205 207 209	Coo portug 2071 283 297 313 333 275 285 296 309 332 345	O 261 278 295 310 327 257 275 292 308 325 341	09-40 274 287 2299 312 2267 299 312 225 287 299 311 325 339	lat. dOL\$+09-09 2655 2822 2999 3155 3322 264 281 298 314 332 349	124	204 205	(dots) 843	211 E(STOP STOP < GO)	GO- 128	(dots) 133	G (00 > 200 2100 2100 < 60)	GO-G 126	(dots) 133	8 E(STOP STOP < GO)
lask type	Monkey Species	to fc ly	disimilar disimilar Search type	α α Set size	9909 77766 5287	X2 09-d015-09 7772 8773	dOLS+05-05 500 811	OSL 500 677 844 1000 1177 500 677 844 1000 1177 1344 500	9 0.20 0.20 0.30 0.31 0.37 0.40 0.45 0.48 0.45 0.48 0.52	O O O O O O O O O O	O 9-40-15-05 0.25 0.34 0.46 0.58 0.70 0.33 0.41 0.50 0.59 0.67 0.75 0.34	a b c c c c c c c c c c	Parasgo 215 225 242	••step 09 09 274 283 297	2216 239	4015+09-09 213 225 240	Noncomp 900 1996 207 1999 212 203 218 207 226 197 207 197 212 1999 217 200 221 208 226 211 230 221 230 221 230 221 230	99-40-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-50-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-59-60-	d lat. 0 0 0 0 0 0 0 0 0 0 0 0 0	Co Pavasgo 2711 2833 2977 3133 3275 2855 2966 3099 3322 3455 3000	O O O O O O O O O O	09-d015- 274 287 299 312 326 275 287 299 311 325 339 297 297	at. dOLS+09-09 265 282 299 315 332 264 281 298 314 332 349 283	124	204 205 223	GO-GO (dOLS) 843 15934	226 E(STOP < GO)	GO-1 128 133	(dots)) 133 143	G (00 > 400 I STOP < 60) G 103 103 103 107	GO-G Lass 126 131	(dots) 133 156	6 (STOP STOP < GO) 4
step lask type	Monkey Species	vi ag Subject	ar disimilar disimilar Search type	8 8 Set size	990 97766 5287 3869	x2 09-d015-09 7772 873	do1\$+09-05 500 811	G 50 67 84 100 117 50 67 84 100 117 134 50 67 84	№ 0.20 0.30 0.45 0.31 0.37 0.45 0.45 0.45 0.45 0.45 0.42 0.45 0.45 0.42 0.42	Nonco 0.60 0.66 0.71 0.74 0.78 0.63 0.72 0.75 0.78 0.60 0.66 0.66 0.71	09-4015-09 0.25 0.34 0.46 0.50 0.33 0.41 0.50 0.59 0.67 0.75 0.34 0.41 0.41 0.48	add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add add	No. 215	••step 09 09 274 283 297	2226 2339	213 225 240	Noncomp 90 196 207 199 212 203 222 207 226 197 207 197 217 200 221 208 226 216 230 226 237 230 241 232 245	9 4 9 4 0 4 0 4 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 3 2 2 2 2 2 2 2 2 2 2 2 2 2	4 0 1at. 0 199 201 202 203 204 197 200 203 205 207 209 228 230	Co pavesq0 271 283 297 313 333 275 285 296 309 332 345 300 305 325	o o o o o o o o o o	09-d015-009 2744 287 2299 312 326 275 287 299 311 325 339 297 309 320	do 15 265 282 299 315 332 264 281 298 314 332 264 281 349 283 349 283 301 319	TSRT pollesqO 124 124	204 205 223	60-60 (dous) 843 15934	208 2226	GO -1 128 133	(doLS) 133 143	G 103 E(STOP STOP < GO) G 107	GO-G 126 131	GO+S (dOLS) 133 156	6 (STOP STOP < GO) 4
I ask type	Monkey Species	th subject	similar disimilar Search type	8 8 Set size	9 9 7766 5287	X2 09-4015-09 7772 873	do15+09-09 500 811	OSL 50 67 84 100 117 50 67 84 100 117 134 50 67 84 100	% N 0.20 0.30 0.38 0.45 0.53 0.37 0.40 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0	Nonco 0.60 0.66 0.71 0.78 0.68 0.63 0.68 0.72 0.75 0.72 0.75 0.78 0.60 0.66 0.71 0.74	09-d0155 0.25 0.34 0.46 0.58 0.30 0.41 0.50 0.67 0.75 0.34 0.41 0.48 0.54	0.30 0.30 0.38 0.47 0.56 0.34 0.42 0.50 0.34 0.42 0.50 0.34 0.42 0.34 0.42 0.34	No. 215 225 242	••step 99 274 283 297	216 239	225 240	Noncomp 9000 196 207 199 212 203 218 203 218 207 226 207 226 207 226 207 226 207 226 208 221 208 221 208 226 216 230 226 237 230 241 232 245 233 249	09-00-00-00-00-00-00-00-00-00-00-00-00-0	0 0 0 0 0 0 0 0 0 0 0 0 0 0	Co 2711 2833 2977 3133 3332 2755 2855 296 309 3322 345 300 305 325 3300	o o o o o o o o o o	09. 40. 40. 40. 40. 40. 40. 40. 40	dots+09-005 2655 2822 282 265 2822 282 283 315 332 264 283 314 332 332 349 283 301 319 336	124 146	204 2223	GO-GO (GOLS) 843 15934	2226 (STOP STOP < GO)	GO-1 128 133	(GOLS) 133 143	G (00 > 401 E(810P 810P < 60)	GO-C	GO+S (GOLS) 133 156	00 E(STOP STOP < GO) 40
Search step Task type	Monkey Species	th subject vi	disimilar disimilar Search type	α Set size	990 97766 5287 3869	x2 09-d015-09 7772 873	do15+09-09 500 811	OSL 50 67 84 100 117 50 67 84 100 117 134 50 67 84 100 117 134	90000000000000000000000000000000000000	Nonco 0.60 0.60 0.71 0.78 0.68 0.72 0.75 0.75 0.75 0.72 0.75 0.76 0.60 0.66 0.71 0.70 0.60 0.60 0.60 0.71 0.70 0.82	mpens 09 d04 % 0.25 0.34 0.36 0.34 0.50 0.67 0.75 0.34 0.41 0.34 0.41 0.34 0.34 0.34 0.35 0.34 0.41 0.35 0.34 0.35 0.34 0.35 0.34 0.35 0.35 0.34 0.35 0.35 0.34 0.35 0.35 0.34 0.35 0.35 0.34 0.35 0.35 0.34 0.35 0.35 0.34 0.35 0.34 0.35 0.34 0.35 0.34 0.35 0.35 0.34 0.35 0.34 0.35 0.35 0.34 0.35 0.35 0.35 0.34 0.35 0.35 0.35 0.35 0.35 0.35 0.35 0.35	0.30 0.30 0.38 0.47 0.56 0.65 0.34 0.42 0.50 0.57 0.65 0.72 0.34 0.42 0.50 0.34 0.42 0.50 0.34 0.42 0.50 0.34 0.42 0.50 0.34 0.42 0.50 0.34 0.42 0.50 0.34 0.42 0.55 0.57 0.55 0.57 0.55 0.57 0.55 0.55	215 225	283	216 239	2225 240	Noncomp 90 00 00 196 207 199 212 203 218 203 218 207 226 197 207 197 212 197 207 197 212 197 207 197 212 192 221 200 221 202 23 225 233 249 234 253 233 257	09-01-5-05-05-05-05-05-05-05-05-05-05-05-05-0	d lat. b b c c c c c c c c	Co pavasqo 271 283 297 285 296 309 332 345 300 305 325 330 300 305 330 335	09000 2611 278 2955 310 3227 2257 2252 308 325 341 2276 293 311 327 344 361	09-d01-5-009 2774 287 3226 287 299 312 287 299 311 325 339 297 309 320 330 330 330 342 354	dots+09-09 265 282 299 315 332 264 283 314 332 349 283 314 332 349 283 301 319 336 353 351	TSRT P P P P P P P P P P	204 205	(dous) 843 15934	2208 2226 2226	GO-1 128 133	(dols)) 133 143	G (00 > 4015 6(2106 200) = 103 103 107	GO-C	(dots) 133 156	00 S8 E(STOP STOP < G0) O
Search Step	Monkey Species	vi subject	disimilar disimilar Search type	8 Set size	9 9 9 7766 5287 3869 436	x2 09-4015:09 7772 873 873	do1\$+09-00 500 811	GSL 50 67 84 100 117 50 67 84 100 117 134 50 67 84 100 117 134 94	0.20 0.30 0.45 0.53 0.45 0.45 0.45 0.45 0.48 0.45 0.48 0.45 0.48 0.46 0.48 0.46 0.50 0.48 0.42 0.27 0.38	Nonco 0 ,60 0.60 0.78 0.78 0.78 0.72 0.75 0.78 0.60 0.60 0.72 0.75 0.78 0.60 0.60 0.60 0.72 0.75 0.78 0.60 0.60 0.60 0.72 0.72 0.75 0.72 0.75 0.74 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75	O O O O O O O O O O	b b c c c c c c c c	реландор 215 225 242 288	283 297	2226 239	225 240 290	Noncomp 196 207 199 212 203 218 203 222 207 226 197 212 208 217 209 217 209 217 200 221 199 212 200 221 200 221 200 221 203 241 232 245 233 249 234 253 234 253 234 253 234 253 244 253 254 263 254 263 254 263 254 263 254 263 254 263 254 263 254 263 254 263 254 263 255 265 255 265 255 265 255 265 255 265 255 265 255 265 255	9 4 0 199 200 202 202 202 202 202 202 2	d lat. 60 199 201 202 203 203 204 197 200 203 203 203 203 203 203 203	Co 271 283 297 313 333 275 285 296 309 332 332 332 332 332 332 332 332 332 33	O O O O O O O O O O	09-d015-00 2774 2897 3226 2755 2877 2999 312 3226 339 2977 309 3200 3300 342 354 3310 3275 2977 309 2977 309 2073 309 2074 2074 2074 2075 2075 2075 2075 2075 2075 2075 2075	at. dots-to9-00 265 282 299 315 332 264 283 301 314 332 344 332 344 332 344 332 345 337 371 327 475 327 475 327 475 327 475 327 327 327 327 327 327 327 327	TSRT pourseq 124 124 146	204 205 2223 2228	60-60 60-60 843 15934 101 947	2226 2226 2226	GO	(dous) 133 143 171 149	G (00 > 401S 401S 103 103 103 107 136	GO-G LUSSL 126 131 148	(dots) 133 156 175	82 90 90
Search Step	Monkey Species	y ch brance for ch	disimilar disimilar Search type	8 8 Set size	9 9 9 7766 5287 3869 436	x2 09-4015-09 7772 873 873 45	do15+09-09 500 811	OSL 50 67 84 100 117 50 67 84 100 117 134 50 67 84 100 117 134 94 141 188	0.20 0.20 0.30 0.38 0.45 0.31 0.37 0.40 0.45 0.48 0.42 0.27 0.38 0.42 0.40 0.40 0.40 0.40 0.40 0.42 0.52 0.20 0.20 0.20 0.30 0.31 0.31 0.37 0.40 0.45 0.52 0.53 0.31 0.37 0.45 0.55 0.55 0.55 0.55 0.55 0.55 0.55	Nonco 0,60 0,66 0,71 0,74 0,78 0,63 0,68 0,63 0,68 0,63 0,66 0,72 0,75 0,78 0,66 0,66 0,66 0,66 0,71 0,75 0,78 0,66 0,60 0,60 0,60 0,60 0,60 0,60 0,6	Oprovide Second Second	ated 0.30 0.30 0.30 0.38 0.47 0.56 0.34 0.42 0.50 0.50 0.34 0.42 0.50 0.52 0.52 0.52 0.52 0.52	No. 215 225 242 288	283 297	2226 239 290	edu 5+09-00 213 2225 240 290	Noncomp 196 00 196 207 199 212 203 222 207 226 197 212 208 226 217 207 197 212 208 226 218 203 224 233 244 253 234 253 234 279 224 263 244 279 272 292	9940 1999 2000 2002 2024 1988 2002 2024 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020	d lat. do 1at. 199 201 202 203 204 197 200 203 203 204 197 200 203 203 203 203 203 203 203	Co 2711 2833 2977 3133 2755 2855 2966 3099 3325 3305 3255 3300 3499 3565 3299 3325 3300 3499 3565 3299 3565 3299 3565 3299 3575 3295 3295 3295 3295 3295 3295 3295 329	O C C C C C C C C C C	og 2774 287 3226 275 287 309 311 325 339 297 309 320 330 342 354 331 375 418	at. dots 265 282 299 315 332 264 283 349 349 349 336 353 371 327 327 374	TSRT pourseq0 124 124 146	204 205 223 228	60-60 60-60 843 15934 101 947	208 2226 2226 2226 2226 2226 2226 2226 2	GO-1 128 133 146	(dots)) 133 143 171	G (00 > 401 S I 401 S I 103 103 103 107 136	GO-G 126 131 148	(dots) 133 156 175 152	8 E(STOP STOP < GO) 0
Search Step	Monkey Species	vi di	disimilar disimilar Search type	8 Set size	9909 77766 5287 3869 436	x2 09-4015-09 7772 8773 8773 873	do15+09-09 500 811	OSL 50 67 84 100 67 84 100 67 84 100 67 84 100 67 84 100 67 84 100 117 134 94 141 134 94 94 94 94 94 94 94	% 0.20 0.30 0.38 0.45 0.31 0.37 0.40 0.42 0.46 0.52 0.27 0.38 0.42 0.46 0.50 0.41 0.52 0.27 0.31 0.54 0.54 0.54	Nonco 0.60 0.60 0.71 0.74 0.58 0.63 0.68 0.72 0.75 0.75 0.75 0.75 0.71 0.75 0.76 0.60 0.60 0.60 0.60 0.61 0.71 0.75 0.79 0.82	O O O O O O O O	0.30 0.30 0.30 0.47 0.56 0.57 0.65 0.34 0.42 0.50 0.57 0.65 0.34 0.42 0.50 0.57 0.65 0.65 0.34 0.42 0.50 0.57 0.52 0.52 0.52 0.52 0.55 0.55 0.55 0.55	No. 225 225 242 288	-step 99 274 283 297 321	226 239 290	225 240 290	Noncomp 90 0 196 207 199 212 203 218 203 218 203 218 203 218 203 218 203 212 207 226 199 217 208 226 203 241 203 244 233 249 234 253 2242 263 234 277 224 263 234 277 224 263 244 279 272 292 287 302 284 279 272 292 287 302	09 199 200 200 202 204 198 200 202 204 204 206 202 204 202 204 202 202 202 203 202 202 203 202 203 202 203 202 204 202 202 204 202 202 204 202 204 202 204 204	d lat. 6015+00-00 1999 1999 2002 2003 2002 2003 2005 2007 2009 2028 2030 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032 2032	Co 271 283 297 285 296 302 332 332 332 332 332 332 332	C C C C C C C C C C	09-4015-509 2774 2877 2999 312 275 2877 2999 312 2275 2877 2999 312 2275 3399 2977 3099 3120 330 3422 3544 3311 3375 4188 4622	at. d015+09-09 2655 2822 2299 315 3322 264 283 314 3322 288 314 332 288 314 332 349 336 353 371 319 336 353 371 327 374 421 468	тяят редова 124 124 146	205 223 228	60-60 (do 15) 843 15934 101 947 664	2208 2226 2226 2226 2226 2226 2226 2226	GO	(do1s))) 133 143 171	G (09 > 4015 4015 103 103 103 103 103 103 103 103 103 103	GO-G Lust 126 131 148	(dots) 133 156 175 152	88 90 90 134 134 134 134 134 134 134 134 134 134
Search Step	Iman Monkey Species	C 23 x1 x2	nilar disimilar disimilar Search type	8 Set size	99 99 77766 5287 3869 436 481	X2 09-d015-00 7772 8773 8773 2256 45	4015+09-00 500 8111 275 444	051 50 67 84 100 117 50 67 84 100 117 134 50 67 84 100 117 134 94 141 188 8235 94 141	% Parage 0.20 0.30 0.38 0.45 0.53 0.31 0.37 0.32 0.45 0.52 0.20 0.38 0.45 0.52 0.27 0.38 0.45 0.52 0.27 0.38 0.45 0.52 0.27 0.38 0.46 0.50 0.61 0.51 0.54 0.52 0.41 0.54 0.54 0.54	Nonco 0.60 0.60 0.71 0.78 0.63 0.63 0.63 0.72 0.75 0.78 0.60 0.60 0.60 0.60 0.61 0.71 0.75 0.60 0.60 0.60 0.71 0.75 0.79 0.60 0.60 0.60 0.71 0.75 0.79 0.62 0.61 0.61 0.61 0.71 0.75 0.79 0.62 0.61 0.61 0.79 0.62 0.61 0.61 0.79 0.62 0.61 0.61 0.79 0.62 0.61 0.61 0.79 0.62 0.62 0.62 0.62 0.62 0.79 0.62 0.62 0.62 0.62 0.79 0.62 0.62 0.62 0.62 0.62 0.79 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.62 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55	mpens 0.25 0.34 0.46 0.58 0.70 0.33 0.41 0.50 0.65 0.75 0.34 0.41 0.41 0.41 0.41 0.41 0.41 0.41 0.4	0.30 0.30 0.30 0.47 0.56 0.65 0.42 0.50 0.42 0.50 0.42 0.42 0.42 0.42 0.42 0.42 0.42 0.4	No. 215 225 242 288 289	-step 9 9 274 283 297 321 325	2226 2339 290	4015+09-09 213 225 240 290 285	Noncomp 9 0 0 199 207 228 207 226 217 207 226 217 208 212 200 219 212 207 207 226 237 208 216 230 216 230 241 232 245 233 233 242 233 244 253 244 232 245 233 244 253 244 257 224 263 244 253 247 257 278 302 214 262 278 214 262 278	09-00-00-00-00-00-00-00-00-00-00-00-00-0	d lat. 0 0 0 0 0 0 0 0 0 0 0 0 0	Co 2711 2833 297 3133 297 285 296 309 332 345 300 305 323 330 305 325 330 309 356 329 336 329 336 329 336 329 336 329 336 329 336 329 336 329 336 329 336 329 336 329 336 329 336 329 336 329 336 329 336 329 336 329 336 329 336 329 336 329 336 329 336 329 336 329 345 329 345 329 345 329 345 329 329 345 329 330 329 345 329 329 329 329 329 329 329 329	9909 261 278 310 327 257 292 308 327 275 292 308 327 341 327 341 327 341 327 341 327 341 327 341 327 341 327 341 327 327 341 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 341 327 327 327 327 327 327 327 327 327 327	09-4015-009 2774 287 299 312 226 287 299 312 326 297 320 330 342 354 331 375 331 375 418 462 331 375 418 331 375 418 331 375 418 331	lat. dO15+009-009 2655 2822 2699 3155 2823 2833 3322 2644 2833 3349 3364 3353 3711 3267 3743 4211 4688 3382	тяят 124 124 146 135	205 223 228 234	60-60 60-60 843 15934 101 947 554	(09 > dOLS dOLS 2111 208 2226 2322	GO-3 128 133 146 140	(dots)) 133 143 171 149	G (00 > 4015 4015 103 103 1136 124	GO-0 126 131 148 141	GO+S (dots) 133 156 175 152 150	82 90 134 121
Search step Task type	Human Monkey Species	20 vi agente vi	disimilar disimilar disimilar Search type	8 Set size	9900 77766 5287 3869 436 481	X2 09-40LS-09 7772 873 2256 45	d015+09-00 500 811 275 44	051 50 67 84 100 117 50 67 84 100 117 134 50 67 84 100 117 134 94 141 1188 235 94 141 1188 235	% 0.20 0.30 0.45 0.53 0.37 0.40 0.45 0.52 0.45 0.42 0.40 0.45 0.41 0.42 0.42 0.27 0.38 0.42 0.40 0.52 0.41 0.52 0.42 0.43 0.54 0.54 0.61 0.43 0.54 0.68	Nonco 0.60 0.60 0.71 0.74 0.78 0.63 0.63 0.63 0.63 0.63 0.72 0.75 0.79 0.82 0.71 0.79 0.61 0.61 0.60 0.61 0.75 0.82 0.62 0.75 0.82 0.62 0.62 0.75 0.82 0.62 0.60 0.60 0.60 0.60 0.72 0.72 0.72 0.73 0.74 0.74 0.74 0.74 0.74 0.74 0.74 0.74	09-40L5-00 0.25 0.34 0.46 0.58 0.65 0.75 0.34 0.41 0.41 0.41 0.41 0.44 0.41 0.44 0.41 0.41	0.30 0.30 0.38 0.47 0.56 0.34 0.42 0.50 0.57 0.65 0.70 0.34 0.42 0.42 0.42 0.42 0.42 0.42 0.42 0.4	No. 215 225 242 288 289	-step 9 274 283 297 321 325	2226 239 287	equation (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)	Noncomp 9 0 0 9 207 9 210 19 217 203 218 107 207 203 218 107 207 203 218 107 207 204 230 204 230 203 218 203 228 203 208 203 208 2	99405500 19992000 2002202 2022202 2022202 2022202 20202202 20202202 20202202 20202202 20202202 20202202 20202202 20202202 20202202 20202202 20202202 20202202 20202202 20202202 20202202 20202202 20202202 20202202 20202202 20202202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 20202 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 202 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2	d lat. 0 0 0 0 0 0 0 0 0 0 0 0 0	Co 271 273 297 313 333 275 296 309 332 345 300 305 325 330 305 325 330 325 330 329 336 423 350 329 336 329 336 329 336 329 336 329 336 329 336 329 332 330 329 329 329 329 329 329 329 329 329 329	9909 2611 278 310 327 255 292 308 275 292 308 275 292 308 275 292 308 325 341 327 325 341 327 344 361 327 344 453 329 374 445	09-4015-009 2774 2887 2999 312 3265 3399 3200 3300 3422 3354 3351 3554 3311 3755 418 4662 3411 3852 342 354	lat. d015+009-009 2655 2822 2999 3155 3322 264 283 3322 3349 3364 3349 3363 3371 3374 4221 3374 4268 3343 3342 3349 3363 3371 3374 4265 3344 3362 4299 3364 3374 429 3365 3374 429 3365 3374 429 3365 3374 429 3374 429 3365 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 429 3374 3374 3374 3374 3374 3374 3374 337	TSRT P P P P P P P P	205 223 228 234	60-60 60-60 843 15934 101 947 554	208 226 226 232	GO- LUSL 128 133 146 140 136	(dolls) 133 143 171 149	G (00 < 200 2100 < 20) 103 103 103 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124 124	GO-G 1226 131 148 141	(dous) 133 156 175 152 150	90 134 121
Search step	Human Monkey Species	y to b Subject	disimilar disimilar disimilar Search type	8 Set size	990 97766 5287 33869 436 481 529	x2 09-0015:09 7772 873 2556 45 110 235	do15+09-00 5000 8111 275 44 44 98	GSL 50 67 84 1000 1177 50 67 84 1000 1177 134 500 67 84 1000 1177 134 94 1411 188 8235 94	9% P 0.20 0.30 0.30 0.33 0.31 0.37 0.40 0.53 0.42 0.48 0.45 0.48 0.42 0.48 0.42 0.48 0.42 0.27 0.38 0.42 0.27 0.38 0.42 0.27 0.38 0.42 0.27 0.38 0.42 0.27 0.38 0.42 0.27 0.38 0.45 0.48 0.45 0.48 0.45 0.48 0.45 0.48 0.45 0.48 0.45 0.48 0.45 0.48 0.45 0.48 0.45 0.48 0.45 0.48 0.45 0.48 0.45 0.48 0.45 0.48 0.45 0.48 0.45 0.48 0.45 0.48 0.45 0.48 0.45 0.48 0.45 0.46 0.55 0.48 0.45 0.46 0.55 0.48 0.45 0.46 0.55 0.48 0.45 0.45 0.48 0.45 0.46 0.55 0.48 0.45 0.45 0.46 0.55 0.48 0.55 0.48 0.55 0.48 0.55 0.48 0.55 0.48 0.55 0.48 0.55 0.48 0.55 0.48 0.55 0.48 0.55 0.48 0.55 0.46 0.55 0.48 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55	Nonco 0.60 0.60 0.71 0.73 0.63 0.74 0.78 0.63 0.75 0.75 0.76 0.71 0.75 0.76 0.76 0.76 0.76 0.76 0.76 0.76 0.76 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75	09-4045509 0.255 0.34 0.46 0.58 0.675 0.70 0.70 0.34 0.41 0.41 0.48 0.655 0.75 0.34 0.41 0.41 0.48 0.655 0.75 0.24 0.25 0.25 0.24 0.25 0.25 0.34 0.41 0.45 0.41 0.45 0.45 0.55 0.55 0.55 0.55 0.55 0.55	0.30 0.30 0.38 0.47 0.56 0.34 0.42 0.50 0.57 0.65 0.57 0.65 0.72 0.34 0.42 0.49 0.42 0.49 0.42 0.49 0.42 0.57 0.34 0.42 0.57 0.57 0.34 0.42 0.57 0.57 0.34 0.42 0.57 0.57 0.57 0.57 0.57 0.57 0.57 0.57	No 215 225 242 288 289 277	-step 99 274 283 297 321 325 304	2226 239 290 287	ev ev ev ev ev ev ev ev ev ev	Noncomp 96 00 0 196 207 203 222 207 226 207 226 207 226 207 226 207 226 203 222 207 226 203 222 207 226 203 222 207 226 203 222 203 221 203 221 203 222 203 221 203 221 203 221 203 221 203 221 203 221 204 23 203 221 204 223 204 223 204 22 204 22 205 20 205	99405500 99405500 99405500 2000 2000 2002 2002 2002 2002 2002 2002 2002 2002 2002 2002 2002 2022 2022 2023 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2020 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 202 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2022 2	d lat. 001 199 201 202 203 204 197 203 203 204 203 203 207 209 207 209 207 209 203 203 204 203 204 203 204 203 204 203 204 203 204 203 204 205 207 207 209 207 209 207 209 207 209 207 209 207 209 207 209 207 209 207 209 207 209 207 209 207 209 207 209 207 209 207 209 207 209 207 209 207 209 207 209 207 209 207 209 207 209 204 209 207 209 204 207 209 207 207 209 204 207 207 207 207 207 207 207 207	Co pavesgo 271 273 297 313 297 313 297 302 309 302 300 305 325 330 345 300 305 325 330 345 327 323 345 329 329 325 329 325 329 325 325 329 325 329 325 325 329 325 329 325 325 325 325 325 325 325 325	O 9 9 9 9 9 9 9 1 1 1 1 1 1 1 1 1 1	09-4015-09 274 287 2299 312 2267 2299 312 3265 339 2297 3020 3300 3422 331 375 418 462 341 342 341 342 341 342 341 342 341 342 341 342 341 342 341 341 341 341 341 341 341 341 341 341	lat. do15+09900 2655 2822 2659 3155 3322 2684 3142 3283 3019 3366 3533 3019 3366 3533 3019 3366 3533 3019 3366 3533 3019 3366 3533 3019 3366 3573 3774 4281 3324 3324 3329 3356 3374 3468 3324 3327 3774 3324 3327 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3774 3777 3774 3774 3777 3774 3777 3774 3777 3774 3777 3774 3777 3774 3777 3774 3777 3774 3777 3774 3777 3777 3774 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 3777 37777 3777 3777 3777 3777 3777 3777 3777 3777	TSRT PovesqO 124 124 146 135 132	204 205 223 228 234 219	60-60 60 843 15934 101 947 554 990	(09 > d015 2111 2008 2226 2322 2232	GO-1 128 133 146 140 136	(dous) 133 143 171 149 149 145	G (00 > d015 d015)] 103 103 107 136 124	GO-0 126 131 148 141 135 136	(dous) 133 156 175 152 150 144	82 90 134 121
Search step Task type	Human Monkey Species	20 vi bi	disimilar disimilar disimilar Search type	8 Set size	9909 77766 5287 3869 436 481 529	x2 09405500 7772 873 2556 45 1110 2335	dolstop-og 500 811 275 44 234	GSL 50 67 84 100 117 50 67 84 100 117 134 50 67 84 100 117 134 94 141 118 8 235 94 141 188 235 94	9% 1 0.20 0.30 0.30 0.33 0.31 0.31 0.37 0.40 0.45 0.48 0.42 0.50 0.41 0.31 0.37 0.40 0.45 0.48 0.42 0.63 0.42 0.63 0.42 0.63 0.54 0.54 0.54 0.54 0.54 0.54 0.54 0.54 0.54 0.54 0.54 0.54 0.54 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55	Nonco 0,60 0,66 0,71 0,74 0,68 0,68 0,68 0,72 0,75 0,60 0,66 0,71 0,60 0,66 0,71 0,60 0,66 0,75 0,62 0,62 0,62 0,62 0,64 0,66 0,66 0,66 0,66 0,66 0,66 0,66	099401550 0.255 0.34 0.41 0.50 0.58 0.58 0.58 0.51 0.59 0.67 0.75 0.24 0.51 0.67 0.25 0.25 0.41 0.59 0.67 0.25 0.34 0.59 0.67 0.25 0.34 0.41 0.59 0.67 0.25 0.34 0.41 0.59 0.59 0.59 0.67 0.59 0.59 0.59 0.59 0.59 0.59 0.59 0.59	0.30 0.30 0.30 0.30 0.42 0.50 0.42 0.50 0.42 0.50 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.42 0.57 0.55 0.42 0.57 0.42 0.57 0.42 0.57 0.55 0.42 0.57 0.42 0.57 0.52 0.57 0.52 0.52 0.57 0.52 0.52 0.57 0.52 0.52 0.57 0.55 0.52 0.57 0.55 0.52 0.57 0.55 0.52 0.57 0.55 0.55 0.52 0.57 0.55 0.52 0.57 0.55 0.52 0.57 0.55 0.52 0.57 0.55 0.52 0.57 0.55 0.52 0.52 0.57 0.55 0.52 0.57 0.55 0.52 0.57 0.52 0.57 0.52 0.52 0.57 0.52 0.57 0.52 0.52 0.57 0.52 0.52 0.52 0.52 0.52 0.52 0.52 0.52	No. 215 225 242 288 289 277	-step 99 274 283 297 321 325 304	2226 239 287 281	do15+09-09 213 225 240 285 281	Noncomp 96 207 196 207 203 218 203 228 207 226 207 227 207 226 207 227 207 226 207 227 207 226 207 227 207 226 207 227 207 226 207 227 207 226 207 24 208 226 207 24 208 226 207 24 208 226 207 24 208 226 207 207 207 207	094005000000000000000000000000000000000	d lat. d lat. log log lat. log lat.	271 283 297 313 333 275 285 309 332 296 309 332 345 300 305 325 330 335 330 335 335 330 335 335 330 335 335	O900 2611 2778 2275 2275 2257 257 257 257 257 257 257	09-d015-09 2774 287 2299 312 2267 2299 311 3225 3399 2977 309 320 330 342 3354 3351 3354 3351 3354 3351 3452 3451 3452 3451 3451 3451 3451 3451 3451 3451 3451	lat. do15+099'09 2652 2892 3152 3322 2664 2893 3152 3322 2843 3493 3264 3283 3319 3363 3371 3277 3744 4221 3344 3327 3744 4229 3744 4221 3744 3822 3744 3824 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 3834 38345 3834 38345 3834 3834 3834 3834 3834 3834 3834 383	TSRT P P P P S S S S S S S S S S	204 204 225 223 228 234 219	60-60 60 843 15934 101 947 5554 990	(09 > dOLS dOLS 211 208 2226 232 232	GO-1 128 133 146 140 136	(dots) 133 143 171 149 149 145	G (00 > 4015 4015) 103 103 107 136 124	GO-0 126 131 148 141 135 136	(AOLS) 133 156 175 152 150 144	90 134 121

•								005	100 100 100	0.00						33							100										
fe								235	0.81	0.00	0.88	0.86					1 340	313	314	516	478	480	490					-					
h S	an		a	4	567	120	124	141	0.27	0.61	0.33	0.34	328	362	332 3	30 26	3 308	286	285	375	360	378	374	137	197	555	216	5 141	163	134	4 140	165	12
5	5		Ē					188	0.59	0.76	0.59	0.59				29	5 323	301	302	414	405	418	421					1					
ŝ	1 ×		dis					235	0.00	0.00	0.95	0.94				35	3 345	326	324	400	449	400	409					1					
••				8	605	182	231	141	0.32	0.57	0.32	0.33	322	353	324 3	25 223	3 288	251	256	360	346	363	357	125	184	808	200	132	147	133	3 132	154	12
								188	0.50	0.71	0.55	0.55				278	3 306	277	278	409	389	406	404										
								235	0.73	0.83	0.77	0.76				307	7 321	298	298	444	433	448	452					1					
								282	0.89	0.90	0.91	0.90				333	3 332	313	312	493	477	489	499					-			_		
				2	275	55	54	47	0.24	0.42	0.20	0.21	344	373	345 3	45 32	1 311	299	298	333	317	339	327	224	274	811	263	3 230	233	203	3 229	267	18
								94	0.44	0.60	0.42	0.42				30	323	309	309	3//	358	3/5	3/2					1					
								188	0.50	0.85	0.83	0.82				35	347	330	330	465	445	453	467					1					
				4	481	61	63	47	0.06	0.45	0.13	0.13	337	372	336	36 35	7 303	282	280	343	320	341	332	213	276	740	268	213	210	193	2 214	223	18
			F					94	0.30	0.62	0.32	0.33				29	3 316	290	291	375	363	381	379					1			1		
			Ē					141	0.59	0.75	0.59	0.59				30	5 329	304	305	428	408	423	426					1					
			50					188	0.87	0.84	0.81	0.80				329	341	318	318	455	453	465	475										
				8	411	64	65	47	0.07	0.46	0.13	0.14	322	367	321 3	320 334	\$ 288	269	263	322	306	329	322	197	267	836	258	3 200	196	180	0 197	198	16
								94	0.30	0.62	0.35	0.34				27	7 299	273	274	364	352	371	369					1					
								141	0.03	0.73	0.62	0.59				29/	5 322	286	280	427	398	415	416					1					
_		-	-	_		_		100	0.70	0.02	0.02	0.70	-	_		1.00	J J22	500	201	435	444	400	404				_	-			-		
a	ble	1, 0	con	ting	ued		_																										
						χ2			% N	onco	mpens	sated	No	-step	latenc	/ No	ncom	pensate	ed lat.	Cor	npen	sated	lat.	TSRT		GO-GO		GO-	STOP	-GO	G0-	GO+S	TOP
																											00			60			60
																			~								v			v			v
																			۵.			0	-				-			ñ			-
dh.			-			0	8				0	8			0	5		8	0			in	01				2			Ĕ			2
ype			ype			P-G0	STOP		P		P-G0	STOP	P		P-G0	p p		P-G0	STO	P		P-G	\$T0	P		~	STO		~	STG		~	STO
k type	ties	ect	ch type	ize	00	STOP-GO	SO+STOP		paved	00	STOP-GO	30+STOP	paved	30	STOP-GO	sored	20	STOP-GO	30+STO	pavie	00	STOP-G	30+STO	pave		(do	OP STO		(dO	OP STO		(do	OP STO
ask type	pecies	ubject	earch type	et size	09-00	O-STOP-GO	O-GO+STOP	SD	bserved	09-00	O-STOP-GO	0-GO+STOP	bserved	09-09	O-STOP-GO	bserved	09-00	O-STOP-GO	:0-G0+ST0	bserved	09-09	O-STOP-G	0-G0+ST0	bserved	SRT	(STOP)	(STOP STO	SRT	(STOP)	(STOP STO	SRT	(STOP)	(STOP STO
I day type	Species	% Subject	Search type	N Set size	09-09 413	6 GO-STOP-GO	00-GO+STOP	US1 188	0,31	09-09 0.51	00-4015-00 0.18	0.18	Observed 409	09-09	09-d015-09	panasqo 13 284	09-09 352	09-4012-00	00-GO+STO	opserved 445	09-09	99-4015-09 431	01S+09-09	pavasdo 139	1281	(AOTS) E(STOP)	237 E(STOP STO	135	E(STOP)	125 E(STOP STO	135	E(STOP)	E(STOP STO
I ask type	Species	Subject	Search type	N Set size	09-09 413	6 GO-STOP-GO	00-GO+STOP	OS1 188 235	0.31 0.46	09-09 0.51 0.63	05-d015-05 0.18 0.35	0.18 0.36	perved 409	09-09 457	09-d015-09 412 4	parasdo 13 284 319	9 -09 352 371	09-d01S-09 296 323	01S+09-09 300 324	Opserved 445 483	09-09 427 473	99-d015-09 431 476	01S+09-09 429 476	pavasdO 139	1181 216	(dOLS)3	237 237	135	(STOP)	125 E(STOP STO	135	E(STOP)	E(STOP STO
lask type	Species	Subject	Search type	N Set size	09-09 413	60-STOP-GO	60-G0+STOP	OSL 188 235 282	0.31 0.46 0.53	09 05 0.51 0.63 0.73	09-d015-09 0.18 0.35 0.54	0.18 0.36 0.55	pavasd0 409	09-09 457	09-d015-09 412 4	parasdo 13 284 319 349	09-09 352 371 388	09-401S-09 296 323 347	01S+09-09 300 324 347	Pervesuo 445 483 514	09-09 427 473 519	95-dOLS-05 431 476 521	015+09-09 429 476 523	Observed 139	1381	(STOP)	E(STOP STO 237	135	134 134	E(STOP STO	135	E(STOP)	E(STOP STO
Task type	Species	% Subject	Search type	N Set size	09-09 413	6 GO-STOP-GO	60-G0+STOP	GS1 188 235 282 329	0.31 0.46 0.53 0.65	09-09 0.51 0.63 0.73 0.81	09-d015-09 0.18 0.35 0.54 0.71	0.18 0.36 0.55 0.71	409	09-09 457	09-d015-09 412 4	pavasqo 13 284 319 349 388	0909 352 371 388 403	09-d015-09 296 323 347 367	01S+09-09 300 324 347 367	pex-esq0 445 483 514 563	09-09 427 473 519 565	9-d015-09 431 476 521 565	015+09-09 429 476 523 570	Observed 139	1381 216	(STOP)	237 237	135	(STOP)	125	135	133	E(STOP STO
Task type	Species	% Subject	Ir Search type	N Set size	09.09 413	96 GO-STOP-GO	00 GO-GO+STOP	OSL 188 235 282 329 376	0.31 0.46 0.53 0.65 0.66	0.51 0.63 0.73 0.81 0.86	09-d015-09 0.18 0.35 0.54 0.71 0.84	0.18 0.36 0.55 0.71 0.83	409	09-09 457	09-d015-09 412 4	parasa parasa 13 284 319 349 388 387 388	0900 352 371 388 403 415	09-d015-09 296 323 347 367 384	015+09-09 300 324 347 367 384	Performance 445 483 514 563 604	09-09 427 473 519 565 612	9-d015-09 431 476 521 565 609	0LS+09-09 429 476 523 570 617	Dbserved 139	216	(JOLE)3	237 237	135	134 E(STOP)	125 E(STOP STO	135	133	12 E(STOP STO
Task type	Species	Subject	milar Search type	A Set size	09 09 413 395	96 95	109 93	OSL 188 235 282 329 376 188 235	0.31 0.46 0.53 0.65 0.66 0.45 0.46	050 0.51 0.63 0.73 0.81 0.86 0.58 0.69	09-d015-09 0.18 0.35 0.54 0.71 0.84 0.26 0.45	0.18 0.36 0.55 0.71 0.83 0.28 0.45	opserved 399	09-09 457 447	09-d015-09 412 4	2005 200 200 200 200 200 200 200 200 200	09.09 352 371 388 403 415 355 373	09-d015-09 296 323 347 367 384 309 333	015+09-09 300 324 347 367 384 325 341	PaviasqO 445 483 514 563 604 448 504	09-09 427 473 519 565 612 438 485	9-d015-09 431 476 521 565 609 446 490	015+09-09 429 476 523 570 617 443 490	00000000000000000000000000000000000000	216 218	(dOLS)3 401	237 249	135 141	(JUS) 134	125 139	135 137	(dots) 133	11 11 11
Task type	Species	% Subject	lisimilar Search type	A N Set size	09 09 413 395	09-401S-09 96 95	109 93	OSL 188 235 282 329 376 188 235 282	paras 0.31 0.46 0.65 0.66 0.45 0.46 0.58	050 0.51 0.63 0.73 0.81 0.86 0.58 0.69 0.78	09-d015-09 0.18 0.35 0.54 0.71 0.84 0.26 0.45 0.64	0.18 0.36 0.55 0.71 0.83 0.28 0.45 0.63	409 399	09-09 457 447	09-d015-09 412 4	113 284 319 349 388 387 01 311 322 354	09-09 352 371 388 403 415 355 373 389	09-d015-09 296 323 347 367 384 309 333 354	015+09-05 300 324 347 367 384 325 341 358	pervesso 445 483 514 563 604 448 504 528	09-09 427 473 519 565 612 438 485 531	9-d015-09 431 476 521 565 609 446 490 535	015+09-09 429 476 523 570 617 443 490 537	Dpserved 139	216 218	(dots) 401 373	237 249	135 141	134 150	125 139	135 137	(dots) 133	121 E(STOP STO
Task type	Species	% Subject	disimilar Search type	A N Set size	09 09 413 395	96 95	109 93	OSL 188 235 282 329 376 188 235 282 329	0.31 0.46 0.53 0.65 0.66 0.45 0.46 0.58 0.74	0.51 0.63 0.73 0.81 0.86 0.58 0.69 0.78 0.85	09-d015-09 0.18 0.35 0.54 0.71 0.84 0.26 0.45 0.64 0.79	0.18 0.36 0.55 0.71 0.83 0.28 0.45 0.63 0.78	4 09	09-09 457 447	09-d015-09 412 4	01 319 349 388 387 01 311 322 354 381	09.09 352 371 388 403 415 355 373 389 402	09-d015-09 296 323 347 367 384 309 333 354 372	015+05-05 300 324 347 367 384 325 341 358 372	Pennesqo 445 483 514 563 604 448 504 528 575	09-09 427 473 519 565 612 438 485 531 577	97-d015-09 431 476 521 565 609 446 490 535 579	015+09-09 429 476 523 570 617 443 490 537 584	139	216 218	(dOLS)3 401 373	237 249	135	(JOD) 134	125 139	135 137	(HOLS) 133	121 E(STOP STO
l ask type	Species	6 Subject	disimilar Search type	A Set size	09 09 413 395	96 95 95	109 93	GSL 188 235 282 329 376 188 235 282 329 376	0.31 0.46 0.53 0.65 0.46 0.46 0.58 0.74 0.80	0.51 0.63 0.73 0.81 0.86 0.58 0.69 0.78 0.85 0.89	09-d015-09 0.18 0.35 0.54 0.71 0.84 0.26 0.45 0.64 0.79 0.90	0.18 0.36 0.55 0.71 0.83 0.28 0.45 0.63 0.78 0.89	409 399	09-09 457 447	09-d015-09 412 4	015+09-09 13 284 319 349 388 387 01 311 322 354 381 422	0900 352 371 388 403 415 355 373 389 402 413	09-d015-09 296 323 347 367 384 309 333 354 372 385	015+09-09 300 324 347 367 384 325 341 358 372 384	PPAJ95QO 445 483 514 563 604 448 504 528 575 610	09-09 427 473 519 565 612 438 485 531 577 624	9-d015-09 431 476 521 565 609 446 490 535 579 623	015+09-09 429 476 523 570 617 443 490 537 584 631	139	216 218	(dots)a 401	237 249	135 141	(dOLS) 134	125 139	135 137	(HOLD) 133	111 111
Task type	Species	& Subject	disimilar Search type	8 A Set size	09 09 413 395 474	09-d01S-09 96 95	4015+09-09 109 93	GS1 188 235 282 329 376 188 235 282 329 376 188 188	0.31 0.46 0.53 0.65 0.46 0.45 0.46 0.45 0.46 0.58 0.74 0.80 0.26	050 0.51 0.63 0.73 0.81 0.86 0.58 0.69 0.78 0.85 0.89 0.53	09rd015r09 0.18 0.35 0.54 0.71 0.84 0.26 0.45 0.64 0.79 0.90 0.20	0.18 0.36 0.55 0.71 0.83 0.28 0.45 0.63 0.78 0.89 0.19	p avasq0 409 399	0900 457 447	09-d015-09 412 4 404 4	01 311 322 349 349 388 387 01 311 322 354 381 422 04 296	09.09 352 371 388 403 415 355 373 389 402 413 354	09-d015-09 296 323 347 367 384 309 333 354 372 385 311	015+09-05 300 324 347 367 384 325 341 358 372 384 301	peviesqO 445 483 514 563 604 448 504 528 575 610 453	09.09 427 473 519 565 612 438 485 531 577 624 426	9-d015-09 431 476 521 565 609 446 490 535 579 623 440	015+09-09 429 476 523 570 617 443 490 537 584 631 431	139 121	216 218 217	(dOLS)3 401 373 368	015 d015)3 237 249	135 141	(dOLS) 134 150	125 139	135 135	(HOLS) 133 157	121 113 130
tep Task type	Species	& Subject	disimilar Search type	8 A Set size	09 09 413 395 474	09-d013-09 96 95	401S+09-05 109 93 125	Q 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 282 329 376	0.31 0.46 0.53 0.65 0.45 0.46 0.45 0.46 0.58 0.74 0.80 0.26 0.53	0.51 0.63 0.73 0.81 0.86 0.58 0.69 0.78 0.89 0.78 0.89 0.53 0.65	09-d015-09 0.18 0.35 0.54 0.71 0.84 0.26 0.45 0.64 0.79 0.90 0.20 0.20 0.39	0.18 0.36 0.55 0.71 0.83 0.28 0.45 0.63 0.78 0.89 0.19 0.40	Parlasco 409 399	09 09 4 57 4 47 4 47	09-d015-09 412 4 404 4	01 311 322 349 349 349 387 01 311 322 354 381 422 04 296 330	O 352 371 388 403 415 355 373 389 402 413 354 371	09-d015-09 296 323 347 367 384 309 333 354 372 385 311 331	0L5+09-09 300 324 347 384 325 341 358 372 384 301 326	pervesso 445 483 514 563 604 448 504 528 575 610 453 486	0900 427 473 519 565 612 438 485 531 577 624 426 473	9-d015-09 431 476 521 565 609 446 490 535 579 623 440 482	015+09-09 429 476 523 570 617 443 490 537 584 631 431 478	139 121	216 218 217	(do1s) 401 373 368	015 d015) 237 249 237	135 141	(dOLS) 134 150	125 139	135 135	(dots) 133 157	121 130
h step Task type	an Species	& Subject	disimilar Search type	8 A Set size	09 09 413 395 474	09-d015-09 96 95 105	4015+09-09 109 93 125	G 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 282 282 282 282 282 282 282 282	P 0.31 0.46 0.53 0.65 0.46 0.58 0.74 0.80 0.26 0.53 0.54	0.51 0.63 0.73 0.81 0.86 0.69 0.78 0.85 0.89 0.53 0.65 0.74	09-4015-09 0.18 0.35 0.54 0.64 0.64 0.64 0.79 0.90 0.20 0.39 0.20	0.18 0.36 0.55 0.71 0.83 0.28 0.45 0.63 0.78 0.89 0.19 0.40 0.40 0.60	perrest 409 399	09 09 4 57 4 47 4 47	09-d015-09 412 4 404 4	01 13 284 319 349 387 01 311 322 354 381 422 04 296 330 356	O 352 371 388 403 415 355 373 389 402 413 354 354 354 371 354 371 387	09-4015-09 296 323 347 367 384 309 333 354 372 385 311 331 331 350	015+09-09 300 324 347 384 325 341 358 372 384 301 326 341 326 341 326 341 326 341	paviesqo 445 483 514 563 604 448 504 528 575 610 453 486 527	09-09 427 473 519 565 612 438 485 531 577 624 426 473 519	9-d015-09 431 476 521 565 609 446 490 535 579 623 440 482 525 440 482 525	015+05-05 429 476 523 570 617 443 490 537 584 631 431 431 431 478 526	139 121	218 217	(dots)) 401 373 368	015 d015)3 237 249	135 141	(dots)a 134 150	125 139 114	135 137	(dots) 133 157	121 113 130
Irch step Task type	Iuman Species	& Subject	disimilar Search type	8 Set size	09 09 413 395 474	95 95 105	4015+09-09 109 93 125	G 1888 2355 2822 329 376 1888 2355 2822 329 376 1888 235 282 2329 329 326	0.31 0.46 0.45 0.46 0.45 0.46 0.45 0.46 0.45 0.46 0.45 0.46 0.58 0.74 0.26 0.53 0.54 0.64 0.63	0.51 0.63 0.73 0.81 0.86 0.69 0.78 0.85 0.85 0.69 0.53 0.65 0.74 0.81	09-40L5-09 0.18 0.35 0.54 0.71 0.84 0.26 0.45 0.64 0.79 0.20 0.39 0.39 0.58 0.75	0.18 0.36 0.55 0.71 0.83 0.28 0.45 0.63 0.78 0.89 0.19 0.40 0.60 0.77 0.89	parasdo 409 399	09 09 4 57 4 47 4 57	404 4 401 4	01 311 322 388 387 01 311 322 388 387 322 324 387 322 324 381 422 04 296 330 356 330 356 337 410	O 9- O 9 352 371 388 403 415 355 373 389 402 413 354 371 387 401 412	09-4015-09 296 323 347 367 384 309 333 354 372 385 311 331 350 367 380	015+09-05 300 324 347 367 384 325 341 358 372 384 301 326 349 368 349 368	P97.1957 445 445 563 604 448 504 528 575 610 453 486 527 553 553 505	09-09 427 473 519 565 612 438 485 531 577 624 426 473 519 565 511	9-d015-09 431 476 521 565 609 446 490 535 579 623 440 482 525 567 609	015+09-09 429 476 523 570 617 443 490 537 584 631 431 478 526 573 573	139 121	216 218 217	(dots) 401 373 368	015 d015)3 237 249	135 141	(dots)a 134	125 139 114	135	(dots) 133 157	121 130
search step Task type	Human	& Subject	disimilar Search type	8 A Set size	99 9 413 395 474 542	95 95	93 125 08	CS1 188 235 282 329 376 188 235 282 232 329 376 188 235 282 2329 376 188 235 282 2329 376 188 235 282 2329 376 188 235 282 2329 376 188 235 282 2329 376 188 235 282 2329 376 188 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 235 235 235 235 235 235 235 235 23	P 0.31 0.46 0.53 0.65 0.46 0.45 0.46 0.58 0.74 0.58 0.74 0.53 0.54 0.65 0.53 0.53 0.54 0.65 0.66 0.53 0.66 0.53 0.54 0.53 0.54 0.53 0.54 0.53 0.54 0.55 0.56 0.56 0.56 0.55 0.56 0.55 0.56 0.55 0.56 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0.55 0	0.51 0.63 0.73 0.81 0.68 0.69 0.78 0.85 0.63 0.63 0.63 0.63 0.63 0.63 0.64 0.81 0.86 0.84	09-40L5-09 0.18 0.35 0.54 0.71 0.84 0.26 0.45 0.64 0.79 0.20 0.39 0.58 0.75 0.87 0.17	0.18 0.35 0.55 0.71 0.83 0.45 0.63 0.78 0.45 0.63 0.78 0.45 0.63 0.78 0.49 0.40 0.60 0.79 0.40	ParrasqO 409 399 395	09-09 457 447 457	09-d015-09 412 4 404 4 401 4	01 311 322 388 387 01 311 322 388 387 01 311 322 388 387 322 388 387 322 336 336 336 336 336 336 336 336 336	O 3 3 3 3 3 3 3 3	09-d015-09 323 347 367 384 303 354 372 385 311 331 350 367 380 327	015+09-09 300 324 347 367 384 325 341 358 372 384 301 326 349 368 349 368 329	P97.195 445 445 563 604 448 504 528 575 610 453 486 527 553 605 483	0909 427 473 519 565 565 531 577 624 426 473 519 565 511 426 473	9-d015-00 431 476 521 565 609 446 490 535 579 623 440 482 525 567 609	015+099-09 429 476 523 570 617 443 490 537 537 584 631 431 431 431 431 431 431 431 619 510	139 121 127	216 218 217	(dOLS)3 401 373 368	015 d015)3 237 249 237	135 141	(dOLS)3 134 150	125 139 114 114 114 205	135 135	(aots) 133 157 137	111 130 130
Search step	Human	& Subject	disimilar Search type	2 Set size	9 9 4 13 395 474	05-d01S-05 96 95	dOLS+05-05 109 93 1225 98	CSL 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1888 2355 2822 3376 1888 2355 2822 3376 1888 2355 2822 3376 1888 2355 2822 3376 1888 2355 2822 3376 1888 2355 2822 3376 1888 2355 2822 3376 3366 1888 2825 2822 3376 3366 3366 1888 2825 2822 3376 346 346 346 356 356 356 366 366 366 366 366 366 36	Paragenetic Sector 0.31 0.46 0.53 0.65 0.46 0.53 0.45 0.46 0.53 0.54 0.64 0.53 0.54 0.64 0.77 0.36 0.44	0.51 0.63 0.73 0.81 0.69 0.78 0.65 0.65 0.65 0.74 0.81 0.86 0.54 0.65	09 d015 00 18 0.35 0.54 0.71 0.84 0.75 0.84 0.79 0.90 0.20 0.39 0.58 0.75 0.87 0.17 0.31	0.18 0.36 0.36 0.35 0.71 0.83 0.45 0.45 0.45 0.45 0.45 0.43 0.63 0.78 0.40 0.60 0.77 0.88 0.19 0.00 0.77 0.89 0.19 0.00 0.019 0.00 0.00 0.00 0.00 0.	ParrasqO 409 399 395 461	09-09 457 447 457 533	404 4 401 4 464 4	013 284 319 349 388 387 319 349 349 349 349 349 349 349 349 349 34	Op Op 352 371 388 403 415 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 374 374 374 374 374 374 401 402 425	296 323 347 367 384 309 333 354 372 385 311 331 350 367 380 327 385	015+09-09 300 324 347 367 384 325 341 358 372 384 301 326 349 368 383 326 349 368 383 326 325 349 368 325 325 349 367 367 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 325 325 384 325 325 325 325 325 325 325 325	Performance of the second seco	0909 427 473 519 565 612 438 485 531 577 624 426 473 519 565 611 496 542	9-d015-00 431 476 521 565 609 446 490 535 579 623 440 482 525 567 609 517 563	015+09-05 429 476 523 570 617 443 490 537 584 431 478 526 573 619 510 557	139 121 127 200	216 218 217 330	(dOLS)) 401 373 368 921	015 d015)3 237 249 237	135 141 129 214	(dots)j 134 150 132 214	139 114 205	135 135 135 135	(aots) 133 157 137 213	111 130 201
Search step	Human	8 Subject	disimilar Search type	8 2 Set size	9 9 4 13 395 474	05-d01S-05 96 95 105	dOLS+05-05 109 93 1225 98	G 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 188 235 282 329 376 188 235 282 329 376 188 235 282 235 282 329 376 188 235 282 235 282 329 376 188 235 282 235 282 329 376 188 235 282 235 282 329 376 188 235 282 235 282 329 376 188 235 282 235 282 329 376 188 235 282 235 282 329 376 188 235 282 235 282 329 376 188 235 282 235 282 329 376 188 235 282 329 376 188 235 282 235 282 329 376 188 235 282 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 141 188 235 235 376 141	Pavesqu 0.31 0.46 0.53 0.66 0.66 0.65 0.66 0.58 0.74 0.80 0.26 0.53 0.54 0.64 0.77 0.36 0.44 0.42	0.51 0.63 0.73 0.86 0.86 0.86 0.85 0.89 0.78 0.85 0.89 0.53 0.65 0.74 0.81 0.86 0.54 0.63 0.63	09 0.18 0.35 0.54 0.64 0.64 0.79 0.90 0.20 0.39 0.20 0.39 0.75 0.87 0.17 0.31 0.31 0.34	0.18 0.36 0.36 0.55 0.71 0.83 0.45 0.45 0.45 0.45 0.43 0.63 0.78 0.63 0.78 0.63 0.77 0.89 0.19 0.040 0.077	Pervesqo 409 399 395 461	09 09 457 447 457	09-d015-09-412 4 404 4 401 4 464 4	D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D D	Op Op 352 371 388 403 415 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 373 374 401 402 425 425 441	296 323 347 367 384 309 333 354 372 385 311 331 350 367 380 327 353 379	OLS+O9-O9 3000 324 347 367 367 367 367 367 367 364 301 326 384 301 326 384 301 326 384 301 326 383 325 384 301	Performance of the second seco	09.09 427 473 519 565 612 438 485 531 577 624 473 519 565 611 496 565 611 496 552 587	9-d015-00 431 476 521 565 609 446 490 535 579 623 440 482 525 567 609 517 563 608	015+09-05 429 476 523 570 617 443 490 537 584 431 478 526 573 619 510 557 604	139 121 127 200	216 218 217 330	(dOLS)3 401 373 368 921	015 d015)3 237 249 237	135 141 129 214	(dots)j 134 150 132 214	139 114 205	135 135 135	(AOLS) 133 157 137 213	121 113 130
Search step	Human	8 Subject	disimilar Search type	8 8 Set size	99 99 413 395 474 542	95 95 95	401S+09-05 109 93 125 98	G 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 235 282 329 376 188 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 235 282 282 282 282 282 282 282 28	Pavesqu 0.31 0.46 0.53 0.66 0.66 0.66 0.66 0.58 0.74 0.80 0.26 0.53 0.54 0.64 0.77 0.36 0.44 0.42 0.58	0.51 0.63 0.73 0.86 0.86 0.85 0.89 0.78 0.85 0.89 0.53 0.65 0.74 0.81 0.86 0.54 0.63 0.63 0.67 10.77	09-d015-009 0.188 0.355 0.54 0.355 0.54 0.45 0.45 0.46 0.49 0.20 0.39 0.58 0.75 0.87 0.39 0.58 0.75 0.87 0.31 0.47 0.47 0.47	0.18 0.18 0.36 0.55 0.71 0.83 0.28 0.45 0.63 0.78 0.45 0.63 0.78 0.19 0.40 0.60 0.77 0.88 0.16 0.30 0.47 0.38	Pervesqo 409 399 395 461	09 09 457 447 457	09-d015-09 412 4 404 4 401 4	01 311 3284 349 348 387 349 348 387 342 345 345 345 345 345 345 345 345 345 345	Op Op 352 371 388 403 415 355 373 389 402 413 354 433 403 354 354 354 401 412 409 425 441 456	296 323 347 367 384 309 333 354 335 385 385 385 381 331 350 367 380 327 353 327 353 379 401	01500000000000000000000000000000000000	pavasqo 445 483 514 563 604 448 504 528 575 610 453 486 527 553 605 483 561 602 656	09-09 427 473 519 565 612 438 485 531 577 624 426 473 519 565 611 496 542 587 633	9-d015-00 431 476 521 565 609 446 490 535 579 623 440 482 525 567 609 517 563 608 653	015+05-05 429 476 523 570 617 443 490 537 584 631 431 478 526 573 619 510 557 604 652	139 121 127 200	216 218 217 330	(dOLS)3 401 373 368 921	015 d015)3 237 249 237	135 141 129 214	(dols) 134 150 132 214	125 139 114 205	Lyst 3 135 137 135	(AOLS) 133 157 137 213	121 113 130 201
Search step	Human Species	& Subject	disimilar Search type	8 A Set size	99 99 413 395 474 542	95 95 95	401S+09-05 109 93 125 98	GS1 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 141 8 8 235 282 329 376 141 8 8 235 282 329 376 141 8 8 235 282 329 376 188 235 282 329 376 188 282 329 376 188 282 329 376 188 285 282 329 376 188 285 282 329 376 188 285 282 329 376 188 285 282 329 376 188 285 282 329 376 188 285 282 329 376 188 285 282 329 376 188 285 282 329 376 188 285 282 329 376 188 285 282 329 376 188 285 282 329 376 188 285 282 329 376 188 285 282 329 376 188 282 329 376 188 285 282 329 376 376 329 376 329 376 329 376 329 376 329 329 329 326 329 329 326 329 329 326 329 329 329 326 282 329 329 326 329 329 329 329 329 329 329 329 329 329	p av.ussq0 0.31 0.46 0.53 0.46 0.53 0.46 0.58 0.74 0.80 0.74 0.36 0.53 0.54 0.74 0.36 0.44 0.77 0.36 0.44 0.42 0.58 0.42	050 0.51 0.63 0.73 0.85 0.65 0.78 0.85 0.85 0.85 0.74 0.85 0.74 0.85 0.74 0.85 0.74 0.85 0.74 0.85 0.74 0.85 0.74 0.85 0.73 0.85 0.85 0.89 0.73 0.85 0.89 0.73 0.85 0.89 0.73 0.85 0.89 0.73 0.85 0.89 0.73 0.85 0.73 0.85 0.73 0.85 0.73 0.85 0.73 0.85 0.78 0.78 0.85 0.78 0.85 0.78 0.85 0.78 0.85 0.78 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.8	09 0.188 0.355 0.54 0.35 0.54 0.45 0.45 0.46 0.49 0.20 0.39 0.58 0.75 0.87 0.31 0.47 0.47 0.47 0.47 0.47	0.18 0.18 0.36 0.55 0.71 0.28 0.45 0.63 0.78 0.45 0.63 0.78 0.45 0.63 0.78 0.19 0.40 0.60 0.77 0.88 0.46 0.30 0.47 0.38 0.47 0.30 0.47 0.38 0.47 0.38 0.45 0.55 0.71 0.55 0.71 0.78 0.78 0.78 0.78 0.78 0.78 0.78 0.78	Paras 4 09 3 99 3 95 4 61	09 09 457 447 447 457 533	09-d015-009 412 4 404 4 401 4	01 311 3284 349 348 387 349 368 387 341 322 354 381 422 354 381 422 354 381 422 354 381 422 354 381 422 454 335 356 377 410 64 344 375 377 410 410 410 410 410 410 410 410 410 410	Op Op 352 371 388 403 415 355 373 389 402 413 354 413 354 354 413 354 401 413 412 409 425 441 456 449	09-4015-09- 2966 323 347 367 384 309 333 354 372 385 311 331 3351 3354 3354 3354 3354 3354	01300 300 324 347 367 384 325 334 325 334 301 326 358 323 324 301 326 358 323 326 352 378 326 352 378 326 352 378 324 324 325 324 325 324 325 324 325 325 325 325 325 325 325 325 325 325	pavasqo 445 483 514 563 604 448 504 528 575 610 453 486 527 553 605 483 561 602 656 701	09-09 427 473 519 565 612 438 485 531 577 624 426 473 519 565 611 496 542 587 633 678	9-4015-05 4311 4766 5251 5655 609 446 490 5355 579 603 440 482 525 567 609 517 563 608 653 699	015+05-06 523 570 617 443 490 537 584 631 431 478 526 573 619 510 557 604 652 699	pp2,3540 139 121 127 200	216 218 217 330	(dots) 401 373 368 921	015 d015) 237 249 237 352	135 141 129 214	(dols) 134 150 132 214	125 139 114 205	135 135 213	(dots))) 133 157 137 213	113 130 201
Search step Task type	Human Species	& Subject	disimilar Search type	2 Set size	9909 4113 3995 4774 5422	05-d015-09 96 95 105 95	d015+09-09 109 93 125 98	GS1 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 141 188 235 282 329 376 141 188 235 282 329 376	pervesso 0.31 0.46 0.53 0.65 0.46 0.53 0.54 0.74 0.36 0.53 0.54 0.74 0.36 0.54 0.74 0.36 0.44 0.42 0.58 0.44 0.42 0.58 0.42	050 0.51 0.63 0.73 0.85 0.69 0.78 0.85 0.89 0.53 0.65 0.74 0.85 0.74 0.85 0.74 0.85 0.74 0.85 0.74 0.85 0.74 0.83 0.77 0.83	09-d015-09 0.18 0.35 0.54 0.71 0.26 0.26 0.45 0.64 0.79 0.20 0.20 0.20 0.39 0.20 0.39 0.20 0.39 0.20 0.39 0.20 0.39 0.20 0.39 0.20 0.39 0.20 0.39 0.20 0.35 0.20 0.20 0.20 0.20 0.20 0.20 0.20 0.2	01500000000000000000000000000000000000	Performance 409 399 395 461	0900 457 447 457 533	09-d015-09 412 4 404 4 401 4	D D D 0 0 0 0 113 264 349 349 349 349 349 360 322 354 361 322 354 361 322 354 361 322 356 366 3300 356 377 410 444 375 416 448 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 438 </td <td>Op Op 352 371 388 403 415 373 373 389 402 413 354 373 387 401 412 409 422 441 409 425 441 456 469 481</td> <td>09-0015-09 296 323 347 384 309 333 354 372 385 311 331 350 354 331 351 354 331 350 354 354 355 354 355 354 355 355 355 355</td> <td>Outset oppool 3000 324 347 367 325 341 358 372 384 301 326 349 368 363 326 352 378 363 326 352 378 401 421 421 437</td> <td>P94-9540 4445 4483 504 5563 6004 4448 504 5575 6010 453 4866 527 553 605 605 605 602 605 602 605 602 605 701 715 543</td> <td>0900 427 473 519 565 6612 438 485 531 577 624 426 473 519 565 611 496 5542 587 633 678 724</td> <td>9-d015-05 431 4376 521 565 565 565 569 446 490 535 579 609 440 482 525 567 609 517 563 608 653 699 743 699</td> <td>015+09-09 429 476 523 570 617 443 490 537 584 631 431 478 526 573 619 510 557 604 652 699 746</td> <td>121 127 200</td> <td>218 217 330</td> <td>(dots) 401 373 368 921</td> <td>015 d015)3 237 249 237 352</td> <td>129 214</td> <td>(dots)j 134 150 132 214</td> <td>1114 205</td> <td>Lyss 135 137 137</td> <td>(aots) 133 157 137 213 213</td> <td>113 130 201</td>	Op Op 352 371 388 403 415 373 373 389 402 413 354 373 387 401 412 409 422 441 409 425 441 456 469 481	09-0015-09 296 323 347 384 309 333 354 372 385 311 331 350 354 331 351 354 331 350 354 354 355 354 355 354 355 355 355 355	Outset oppool 3000 324 347 367 325 341 358 372 384 301 326 349 368 363 326 352 378 363 326 352 378 401 421 421 437	P94-9540 4445 4483 504 5563 6004 4448 504 5575 6010 453 4866 527 553 605 605 605 602 605 602 605 602 605 701 715 543	0900 427 473 519 565 6612 438 485 531 577 624 426 473 519 565 611 496 5542 587 633 678 724	9-d015-05 431 4376 521 565 565 565 569 446 490 535 579 609 440 482 525 567 609 517 563 608 653 699 743 699	015+09-09 429 476 523 570 617 443 490 537 584 631 431 478 526 573 619 510 557 604 652 699 746	121 127 200	218 217 330	(dots) 401 373 368 921	015 d015)3 237 249 237 352	129 214	(dots)j 134 150 132 214	1114 205	Lyss 135 137 137	(aots) 133 157 137 213 213	113 130 201
Search step	Human Species	& Subject	ar disimilar Search type	2 Set size	99 93 413 395 474 542 614	09-d015-09 96 95 105 95	d015+09-09 109 93 125 98 114	GS1 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1411 1888 2355 2822 329 3766 1411 1888 2355 2822 329 3766 1411	0.31 0.46 0.53 0.65 0.46 0.46 0.58 0.74 0.80 0.26 0.53 0.54 0.53 0.54 0.53 0.54 0.53 0.54 0.53 0.54 0.53 0.54 0.53 0.54 0.53 0.55 0.66 0.42 0.53 0.55 0.66 0.46 0.55 0.46 0.46 0.46 0.46 0.46 0.46 0.46 0.46	0,51 0.51 0.63 0.73 0.81 0.58 0.69 0.78 0.69 0.53 0.65 0.65 0.65 0.65 0.65 0.65 0.74 0.63 0.74 0.63 0.77 0.54 0.67 0.77 0.77 0.77 0.83 0.77	09-d015-09 0.18 0.35 0.54 0.71 0.84 0.75 0.64 0.79 0.20 0.20 0.39 0.20 0.39 0.58 0.75 0.87 0.31 0.47 0.31 0.47 0.33 0.76 0.63 0.76 0.86 0.16	01500000000000000000000000000000000000	Parago 409 399 395 461	9 4 57 447 457 533	09-d015-09 412 4 404 4 401 4 464 4 457 4	Display Display <thdisplay< th=""> <thdisplay< th=""> <thd< td=""><td>Op Op 352 371 388 403 415 373 389 402 413 373 389 402 413 371 384 371 387 401 412 409 421 409 425 441 456 469 481 410 402 425</td><td>09 d01 s00 296 323 347 367 384 309 333 354 3372 385 331 351 351 351 351 351 351 351 351 35</td><td>05000000000000000000000000000000000000</td><td>P94-9540 4445 4483 504 528 575 600 453 486 527 553 605 605 605 602 605 602 605 701 715 517</td><td>0900 427 473 519 565 661 438 485 531 577 624 426 473 519 565 611 496 5542 587 633 678 724 502 507</td><td>974015:00 431 476 521 565 609 446 490 535 579 623 440 482 525 567 609 517 563 608 653 609 743 515 551</td><td>015+05-05 429 476 523 570 617 443 490 537 584 631 478 526 573 619 510 557 604 652 699 746 510</td><td>121 127 200 209</td><td>218 217 330 337</td><td>(dots)) 401 373 368 921 425</td><td>015 d015) 237 249 237 352 358</td><td>135 141 129 214 221</td><td>(dots) 134 150 132 214 219</td><td>213</td><td>Lyss 135 137 137 137 135 213 222</td><td>(aots) 133 157 137 213 221</td><td>113 130 201</td></thd<></thdisplay<></thdisplay<>	Op Op 352 371 388 403 415 373 389 402 413 373 389 402 413 371 384 371 387 401 412 409 421 409 425 441 456 469 481 410 402 425	09 d01 s00 296 323 347 367 384 309 333 354 3372 385 331 351 351 351 351 351 351 351 351 35	05000000000000000000000000000000000000	P94-9540 4445 4483 504 528 575 600 453 486 527 553 605 605 605 602 605 602 605 701 715 517	0900 427 473 519 565 661 438 485 531 577 624 426 473 519 565 611 496 5542 587 633 678 724 502 507	974015:00 431 476 521 565 609 446 490 535 579 623 440 482 525 567 609 517 563 608 653 609 743 515 551	015+05-05 429 476 523 570 617 443 490 537 584 631 478 526 573 619 510 557 604 652 699 746 510	121 127 200 209	218 217 330 337	(dots)) 401 373 368 921 425	015 d015) 237 249 237 352 358	135 141 129 214 221	(dots) 134 150 132 214 219	213	Lyss 135 137 137 137 135 213 222	(aots) 133 157 137 213 221	113 130 201
Search step	Human Species	& Subject	milar disimilar Search type	et size	99 93 413 395 474 542 614	09-4013-09 96 95 105 95	d015+09-09 109 93 125 98 114	GS1 1888 2355 2822 3299 3766 1888 2355 2822 3299 3766 1411 1888 2352 2822 3299 3766 1411 1888 2359 3766 1411 1888 2329 3766 1411 1888 2329 3766 1411	0.31 0.46 0.53 0.66 0.45 0.46 0.58 0.74 0.58 0.54 0.64 0.67 0.36 0.44 0.42 0.53 0.54 0.77 0.36 0.77 0.37 0.43	09-09 0.51 0.63 0.73 0.86 0.68 0.85 0.85 0.85 0.85 0.74 0.85 0.86 0.86 0.85 0.74 0.86 0.86 0.86 0.86 0.85 0.83 0.85 0.86 0.86 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85	09-4015-05 0.18 0.55 0.54 0.64 0.64 0.64 0.64 0.64 0.64 0.69 0.79 0.79 0.79 0.79 0.79 0.39 0.58 0.77 0.31 0.47 0.63 0.64 0.64 0.64 0.65 0.64 0.65 0.64 0.65 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.54 0.55 0.55	015+09-09 0.18 0.36 0.55 0.71 0.83 0.28 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45	Parago 409 399 395 461 453	9 457 447 457 533	09 d015 09 412 4 404 4 401 4 464 4	Diamond Diamond <t< td=""><td>O O 3522 3711 388 403 415 3552 373 389 402 413 413 354 371 388 403 354 371 389 402 413 410 425 441 456 469 481 410 427</td><td>09 d01 s00 296 323 347 367 384 309 333 354 309 333 354 311 331 331 335 335 311 331 335 335 335</td><td>0 300 324 347 367 384 325 341 325 384 301 326 384 301 326 383 326 384 301 326 384 301 326 384 301 326 327 384 301 326 327 384 301 327 384 301 326 384 301 326 327 384 301 326 327 384 301 326 327 384 301 326 327 384 301 326 327 384 301 326 327 384 327 384 301 326 327 384 327 328 327 328 327 328 327 328 327 328 327 328 327 328 327 328 327 328 327 328 327 328 327 328 327 328 327 328 327 328 327 328 328 329 329 329 329 329 329 329 329</td><td>pavesqo 445 483 514 563 604 448 555 610 453 486 527 553 605 483 561 605 483 561 605 553 701 715 517 574 601</td><td>0900 427 473 519 565 612 438 485 531 577 624 426 473 505 611 496 542 587 633 678 724 502 547 502 543</td><td>974015°09 431 476 521 565 609 446 490 535 579 623 440 482 525 567 609 517 563 608 517 563 609 9743 515 561</td><td>015-05-05 429 476 523 570 617 443 490 617 537 584 631 431 431 478 526 537 573 604 557 604 557 604 557 604</td><td>2009</td><td>216 218 217 330 337</td><td>(dots))) 401 373 368 921 425</td><td>015 d015)3 237 249 237 352 358</td><td>135 141 129 214 221</td><td>(dots)) 134 150 132 214 219</td><td>213 213</td><td>Lys 1 3 135 1 137 1 135 1 213 2 222</td><td>(dots) 133 157 137 213 221</td><td>113 113 201 219</td></t<>	O O 3522 3711 388 403 415 3552 373 389 402 413 413 354 371 388 403 354 371 389 402 413 410 425 441 456 469 481 410 427	09 d01 s00 296 323 347 367 384 309 333 354 309 333 354 311 331 331 335 335 311 331 335 335 335	0 300 324 347 367 384 325 341 325 384 301 326 384 301 326 383 326 384 301 326 384 301 326 384 301 326 327 384 301 326 327 384 301 327 384 301 326 384 301 326 327 384 301 326 327 384 301 326 327 384 301 326 327 384 301 326 327 384 301 326 327 384 327 384 301 326 327 384 327 328 327 328 327 328 327 328 327 328 327 328 327 328 327 328 327 328 327 328 327 328 327 328 327 328 327 328 327 328 327 328 328 329 329 329 329 329 329 329 329	pavesqo 445 483 514 563 604 448 555 610 453 486 527 553 605 483 561 605 483 561 605 553 701 715 517 574 601	0900 427 473 519 565 612 438 485 531 577 624 426 473 505 611 496 542 587 633 678 724 502 547 502 543	974015°09 431 476 521 565 609 446 490 535 579 623 440 482 525 567 609 517 563 608 517 563 609 9743 515 561	015-05-05 429 476 523 570 617 443 490 617 537 584 631 431 431 478 526 537 573 604 557 604 557 604 557 604	2009	216 218 217 330 337	(dots))) 401 373 368 921 425	015 d015)3 237 249 237 352 358	135 141 129 214 221	(dots)) 134 150 132 214 219	213 213	Lys 1 3 135 1 137 1 135 1 213 2 222	(dots) 133 157 137 213 221	113 113 201 219
Search step	Human Species	& Subject	similar disimilar Search type	a b c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c c <thc< th=""> <thc< th=""> <thc< th=""> <thc< th=""></thc<></thc<></thc<></thc<>	0000 413 395 474 542 614	95 95 105	d015+09-09 109 93 125 98 114	G 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 239 376 188 235 282 282 329 376 188 235 282 282 329 376 188 235 282 282 282 329 376 188 235 282 282 282 376 188 285 282 282 376 188 285 282 282 376 188 285 282 285 282 376 188 285 282 285 376 188 285 282 285 376 188 285 282 285 376 188 285 282 285 376 188 285 282 282 376 188 285 282 376 188 285 282 282 376 188 285 282 282 376 188 285 282 282 376 188 285 282 282 376 188 285 282 282 376 188 285 282 282 282 282 282 282 2	p9253345101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101010101101101111111111111	09-09 0.51 0.63 0.73 0.86 0.69 0.78 0.65 0.74 0.85 0.74 0.86 0.65 0.74 0.86 0.63 0.71 0.71 0.83 0.71 0.71 0.83 0.65 0.64 0.63 0.73 0.83 0.65 0.63 0.73 0.84 0.65 0.74 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85	09-d015-005 0.18 0.35 0.54 0.25 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.50 0.39 0.58 0.37 0.31 0.47 0.31 0.47 0.31 0.47 0.63 0.58 0.56 0.51 0.51 0.51 0.51 0.51 0.55 0.55 0.55	015+09-05 0.18 0.36 0.55 0.55 0.65 0.63 0.45 0.63 0.45 0.63 0.45 0.63 0.46 0.40 0.40 0.40 0.40 0.40 0.40 0.40	2399 399 461 453	457 447 457 533 524	09 d015 09 412 4 404 4 401 4 464 4	Partial Partial 13 2844 311 384 388 387 301 311 323 344 387 387 422 354 387 330 356 335 377 410 463 344 3557 333 365 357 365 367 377 410	Op Op 352 371 388 403 415 355 373 389 402 413 355 373 389 402 411 354 374 374 374 374 374 374 401 412 402 425 441 456 461 441 456 461 441 441 441 441 456 461 441 456 481 441 443 457	09 d01 s02 296 323 347 367 384 333 354 331 3354 331 3354 3372 385 311 331 350 327 380 327 363 367 380 327 353 367 380 327 353 367 380 327 353 367 367 367 367 367 367 367 367 367 36	Outset of the second se	Pavesqo 445 483 514 554 450 4528 575 610 453 486 527 553 605 483 561 605 656 656 701 715 517 574 601 6658	09:00 427 473 519 565 612 438 531 577 624 426 473 519 565 611 496 547 565 611 496 542 587 633 678 724 502 547 639	974015709 4311 4776 521 5655 609 4466 490 5355 579 623 440 482 525 567 609 517 563 608 653 608 653 609 9743 515 561 607 652	015+09-05 429 476 523 570 617 443 490 617 537 584 631 431 431 478 526 573 619 510 557 604 652 699 746 510 557 604 652	2009	216 218 217 330 337	(dots) 401 373 368 921 425	015 d015)] 237 249 237 3552 3558	135 141 129 214 221	(dots)) 134 150 132 214 219	213 213	Last 135	(dots) 133 157 137 213 221	015 d015) 121 113 130 201 215
Search step	Human Species	& Subject	similar disimilar Search type	8 2 2 4 size	00 03 413 395 474 542 614	95 95 1105 95	d015+05-05 109 93 125 98 114	G 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 282 329 376 188 235 282 282 329 376 188 235 282 282 282 329 376 188 235 282 282 282 329 376 188 235 282 282 282 329 376 188 285 282 282 282 376 188 285 282 282 282 376 188 285 282 282 285 282 285 282 285 282 285 282 285 282 285 282 285 282 285 285	Performance of the second seco	050 0.51 0.63 0.73 0.81 0.86 0.58 0.85 0.85 0.65 0.65 0.65 0.64 0.64 0.74 0.64 0.64 0.71 0.77 0.83 0.65 0.66 0.66 0.66 0.68 0.65 0.80 0.65 0.80 0.51	09-d015-009 0.118 0.354 0.54 0.264 0.454 0.264 0.465 0.644 0.79 0.200 0.39 0.39 0.39 0.39 0.375 0.37 0.37 0.37 0.31 0.347 0.63 0.75 0.64 0.32 0.568 0.32 0.568 0.54 0.54 0.55 0.54 0.54 0.54 0.54 0.54	0015+09-09 0.18 0.36 0.36 0.35 0.71 0.83 0.28 0.45 0.63 0.78 0.28 0.45 0.63 0.78 0.63 0.79 0.40 0.60 0.63 0.77 0.88 0.16 0.30 0.047 0.63 0.76 0.32 0.55 0.71 0.83 0.75 0.83 0.75 0.83 0.75 0.83 0.75 0.83 0.75 0.83 0.75 0.83 0.75 0.83 0.75 0.83 0.75 0.83 0.75 0.83 0.75 0.83 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75	2399 399 461 453	457 447 457 533 524	09 d015 09 412 4 404 4 401 4 464 4	Participant Participant 13 2844 311 384 388 388 380 381 422 354 364 381 422 354 381 422 364 330 356 377 367 333 367 338 470 406 467 344 463 376 378 363 378 363 378 363 378 363 378 363 378 363 378 363 378 363 378 363 378 363 378 363 378 363 378 363 378 363 378 363 378 363 378 363	Q G 352 371 388 403 415 355 373 389 402 413 354 354 371 387 354 371 387 401 412 409 422 441 456 469 481 410 427 443 457 469	09-0015-009 323 347 367 364 309 333 344 372 385 311 350 367 367 367 367 367 367 367 367 367 367	Outset of the second se	pavaesq0 445 448 504 575 604 448 575 605 610 453 486 527 553 605 602 656 656 602 656 657 657 657 657 658 6685	09:00 427 473 519 565 612 438 531 577 624 426 473 519 565 611 496 547 503 633 678 724 502 547 593 639 685	974015509 4311 4776 5251 5655 609 4460 4355 579 623 440 482 525 567 608 653 608 653 608 653 608 653 608 517 5661 607 515 561 607 652 6697	015+009-009 429 429 476 523 570 617 443 431 478 526 573 604 652 699 510 557 604 652 699 510 557 604 652 699	139 121 127 200 209	216 217 330 337	(dots))) 401 373 368 921 425	015 d015)] 237 249 237 3552 3558	135 141 129 214 221	(dols) 134 150 132 214 219	125 139 114 205	135 135 135 137 135	(ao15) 133 157 137 213 221	015 d015) 121 113 130 201
Search Step Task type	Human Species	20 Subject	similar disimilar Search type	8 2 2 4 8 8	99 413 395 474 542 614 645	95 95 105 95 1111	d015+05-05 109 93 125 98 114 102	OSL 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 141 188 235 282 329 376 141 188 235 282 329 376 141 188 235 282 329 376 141 188 235 282 329 376 141 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 235 282 329 376 188 329 376 188 235 2329 376 188 235 2329 376 188 235 2329 376 188 235 2329 376 188 235 2329 376 188 235 2329 376 188 235 2329 376 188 235 2329 376 188 235 2329 376 188 235 2329 376 188 235 282 235 2329 376 188 235 282 235 2329 376 188 235 282 235 282 329 376 188 235 282 235 282 329 376 188 188 235 282 329 376 188 188 235 282 329 376 188 188 235 282 329 376 188 188 235 282 329 376 188	Performance of the second seco	050 0.51 0.63 0.73 0.81 0.58 0.65 0.65 0.65 0.65 0.65 0.74 0.63 0.74 0.63 0.71 0.77 0.83 0.67 0.56 0.66 0.73 0.56 0.56 0.56 0.56 0.57 0.56 0.57 0.57 0.57 0.57 0.57 0.57 0.57 0.57	094045509 0.1880.355 0.5440.251 0.5440.250 0.4500.4500.4500.4500.4500.45000.45000.45000.45000.45000.45000.45000.45000.45000.45000.45000.45000.45000.45000.45000.45000.45000.45000.45000.45000.45000.45000.45000.450000.45000.450000.450000.450000.4500000000	0015+09-09 0.18 0.36 0.35 0.71 0.28 0.45 0.63 0.78 0.49 0.40 0.63 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0.4	2399 3395 461 453	9909 457 447 457 533 524	00 d01 412 4 404 4 401 4 464 4 457 4	And Sector Pactor Sector 13 284 319 340 387 387 387 354 387 301 311 354 387 354 387 301 311 354 387 354 354 311 354 354 364 344 325 377 4100 344 344 344 344 3557 336 367 367 363 367 3778 364 367	0 0 352 371 388 403 415 355 371 388 402 413 354 373 389 402 413 354 371 387 401 412 412 441 455 441 456 4421 440 440 440 443 459 4443 459 4440	09 d015 00 2966 323 347 367 384 309 333 354 372 385 354 372 385 351 351 350 367 353 379 401 421 437 326 353 379 401 421 421 427 421 427 326 384 427 428	015+007-00 300 324 347 384 301 326 384 301 326 383 384 301 326 383 384 301 326 383 341 327 384 301 326 383 342 384 301 326 384 301 326 384 301 326 384 301 326 384 301 326 384 301 326 384 301 326 384 301 326 384 301 326 384 301 326 384 301 326 384 327 384 301 326 383 326 384 327 384 301 326 383 326 328 327 384 327 384 327 384 327 384 327 384 327 384 327 384 327 384 327 384 327 384 327 384 327 384 327 384 327 384 327 388 328 328 328 328 328 328 328	pav.ass(0) 445 448 504 528 604 452 448 504 452 605 605 605 605 605 605 605 605 605 605	09-00 565 512 555 512 557 524 426 473 519 565 611 577 565 611 496 555 611 496 555 633 678 496 557 502 547 593 639 635 557	974015'00 4416 421 525 579 623 440 482 525 579 623 440 482 525 579 517 563 609 517 563 608 653 609 743 515 5561 607 652 554	015+09-00 429 4276 523 570 617 443 490 537 6617 431 431 431 431 431 431 431 431 431 431	200 200	216 218 217 330 337 321	(do15) 401 373 368 921 425 623	015 d015)] 237 249 237 352 358 358	135 141 129 214 221	(dols)) 134 150 132 214 219 210	205 213 207	137 135 135 137 135 135	(aots) 133 157 137 213 221 209	015 d015)j 121 113 201 201
Search step	Human Species	a Subject	similar Search type	8 2 Set size	9909 4113 3995 4774 5442 6114 6445	95 95 105 95 1111	4015+09:05 109 93 125 98 1114 102	Ost 1888 2355 2822 3299 3766 1888 2352 2822 3299 3766 1888 2352 2822 3299 3766 1411 1888 2352 2822 3299 3766 1411 1888 2352 2822 3299 3766 1411 1888 2352 2822 3299 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3766 1888 2352 2329 3769 1888 2352 2329 3299 3769 1888 2352 2329 3299 3299 3299 3299 3299 3299	Pavesed 0.31 0.46 0.53 0.65 0.46 0.58 0.74 0.26 0.53 0.54 0.26 0.53 0.54 0.64 0.64 0.53 0.54 0.64 0.64 0.64 0.62 0.77 0.36 0.44 0.42 0.53 0.67 0.43 0.65 0.46 0.46 0.46 0.46 0.46 0.46 0.46 0.46	050 0.51 0.63 0.73 0.81 0.86 0.53 0.65 0.74 0.65 0.74 0.83 0.86 0.74 0.86 0.84 0.83 0.74 0.86 0.84 0.83 0.86 0.84 0.83 0.84 0.85 0.84 0.85 0.84 0.85 0.84 0.85 0.84 0.85 0.85 0.85 0.85 0.85 0.85 0.85 0.85	0940155009 0.188 0.355 0.54 0.71 0.84 0.71 0.84 0.75 0.64 0.75 0.39 0.50 0.32 0.39 0.58 0.75 0.37 0.37 0.37 0.37 0.37 0.37 0.37 0.37	0015+09-09 0.18 0.36 0.36 0.35 0.27 0.45 0.63 0.45 0.63 0.78 0.45 0.63 0.78 0.78 0.78 0.45 0.68 0.45 0.60 0.47 0.63 0.47 0.63 0.47 0.63 0.47 0.63 0.47 0.66 0.66 0.66 0.66 0.66 0.66 0.66 0.6	Parties Go 409 399 395 461 453 478	9909 457 447 457 533 524	00 d01 s 00 d01 d0	P S 349 349 349 388 388 388 389 388 380 311 311 312 343 388 380 388 388 388 422 356 376 366 377 410 463 344 375 333 376 376 416 463 476 366 3778 368 384 384	O O 352 371 388 403 402 415 355 373 389 402 411 354 402 412 403 354 402 413 354 402 413 354 401 412 409 425 441 456 469 443 457 469 443 457 469 443 457 443 457 443 457 443	09-005-009 2966-323 347 367 384 309 333 354 372 383 3354 333 354 333 355 3311 350 333 354 332 353 354 353 354 350 327 353 367 380 327 353 367 380 421 326 328 341 354 329 354 329 354 323 354 323 354 325 325 325 325 325 325 325 325 325 325	015+09-00 300 324 347 384 305 325 326 3384 301 326 349 384 301 326 329 383 326 329 349 341 326 349 341 326 349 384 407 384 384 384 384 384 384 384 384	pav.ass(0) 445 448 504 528 604 452 448 575 610 453 486 527 553 605 483 561 605 483 561 605 574 601 656 701 715 577 601 658 577 601 602	09-00 565 512 555 5612 557 5612 557 562 426 473 519 565 611 577 555 612 426 473 555 611 456 565 613 678 455 565 613 678 557 502 557 559 557 559 557 559 557 557 557 557	974015°00 431 476 521 565 5665 609 446 490 535 579 623 579 623 579 623 579 623 579 623 579 623 579 609 743 517 566 605 609 743 517 561 607 605 607 605 609 743 517 561 609 609 743 517 565 565 609 609 743 517 557 609 609 743 517 557 609 609 743 517 557 609 609 743 517 555 565 609 609 740 740 757 555 565 609 609 740 757 555 565 609 609 740 757 555 565 609 609 740 757 555 565 565 565 565 565 565 565 565	019-09-09-09-09-09-09-09-09-09-09-09-09-09	2000	218 217 330 337 321	(4015) 401 373 368 921 425 623	015 d015)] 237 249 237 352 358 358	135 141 129 214 221 206	(dOLS)] 134 150 132 214 219 210	1139 114 205 213 207	135 135 135 137 137 213 222 205	(AOLS) 133 157 137 213 221 209	015 d015) 1121 1130 201 200
Search step Task type	Human Species	🖉 Subject	similar Search type	8 2 Set size	9999 4113 3995 4774 5442 6114 645	95 95 1105 95 1111	d01\$+09:09 109 93 125 98 114 102	G 1888 2352 2822 3299 3766 1888 2352 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1411 1888 2355 2822 3299 3766 1418 1888 2355 2822 3299 3766 1418 1888 2355 2822 2358 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2825 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2855 2	Pavesed 0.31 0.46 0.53 0.65 0.46 0.58 0.74 0.58 0.74 0.58 0.74 0.26 0.53 0.54 0.26 0.53 0.54 0.26 0.53 0.54 0.26 0.36 0.42 0.53 0.65 0.42 0.53 0.65 0.46 0.42 0.53 0.65 0.46 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45	0,51 0.63 0.73 0.86 0.88 0.89 0.78 0.85 0.78 0.53 0.65 0.74 0.83 0.53 0.53 0.53 0.53 0.53 0.53 0.53 0.5	09 4015 00 18 00 0.54 00.54 00.54 00.54 00.54 00.54 00.54 00.54 00.54 00.59 00.59 00.59 00.59 00.59 00.59 00.57 00.57 00.57 00.57 00.57 00.57 00.57 00.57 00.57 00.57 00.57 00.58 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00.55 00	0015+09-09 0.188 0.55 0.711 0.83 0.288 0.455 0.78 0.453 0.450 0.633 0.78 0.490 0.400 0.633 0.777 0.888 0.455 0.790 0.400 0.771 0.400 0.55 0.791 0.400 0.55 0.791 0.400 0.55 0.791 0.400 0.55 0.791 0.400 0.55 0.791 0.400 0.578 0.400 0.578 0.400 0.578 0.400 0.578 0.400 0.578 0.400 0.578 0.400 0.578 0.400 0.578 0.400 0.578 0.400 0.578 0.400 0.578 0.400 0.577 0.578 0.400 0.577 0.578 0.577 0.578 0.577 0.578 0.578 0.577 0.578 0.577 0.578 0.577 0.577 0.578 0.577 0.578 0.577 0.577 0.577 0.578 0.577 0.577 0.577 0.577 0.577 0.577 0.577 0.577 0.577 0.577 0.577 0.577 0.577 0.577 0.577 0.578 0.576 0.577 0.578 0.576 0.576 0.578 0.576 0.576 0.576 0.576 0.576 0.576 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.588 0.5888 0.5888 0.5888 0.5888 0.5888 0	Pavasqo 409 399 395 461 453 478	9 09 457 447 457 533 524 541	09 d01 412 4 401 4 401 4 464 4 457 4	P Sector 349 349 349 388 387 322 354 388 387 322 354 322 354 322 354 322 354 353 377 363 377 363 377 363 377 363 377 363 377 363 377 363 377 363 377 363 377 363 377 363 377 363 377 363 377 363 377 363 384 466 384 466 384 466 384 466 384 324 384 324 384 325	Op Op 352 371 388 403 415 373 371 389 402 413 371 373 373 373 373 373 401 354 371 387 401 354 412 409 425 441 456 469 441 457 469 4458 457 469 4458 475	09-4015-009 296 323 347 384 309 333 354 331 331 331 331 331 335 335 335 335 335	OLS+OOPOOD 3000 324 367 384 307 384 301 325 382 301 325 382 301 326 302 325 382 301 326 325 382 302 325 384 301 326 325 384 301 325 384 301 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 384 325 325 384 325 325 325 325 384 325 325 325 325 325 325 325 325	Paraget 1	O9.09 427 473 519 565 531 624 426 473 519 565 565 611 496 547 593 678 724 593 639 685 547 593 639 636	974015'00 431 476 521 565 565 609 446 490 446 490 623 440 482 557 567 603 608 653 5567 608 653 5567 608 653 5567 609 551 5561 607 652 699 7554 607 652 607 652 607 652 607 652 607 607 652 607 607 607 652 607 607 607 607 607 607 607 607 607 607	015+009-009 4299 4766 5233 5700 617 4433 4900 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 5377 6044 6522 6099 5357 5557 6044 6522 6099 5557 6044 6522 6094 6527 6044 6522 6094 6527 6044 6527 6044 6527 6044 6527 6044 6527 6044 6527 6044 6527 6044 6527 6044 6527 6044 6527 6044 6527 6044 6527 6044 6527 6044 6527 6044 6527 6044 6527 6044 6527 6044 6527 6044 6527 6044 6527 6044 6527 6047 6577 6044 6527 6047 6577 6044 6577 6044 6577 6044 6577 6044 6577 6044 6577 6044 6577 6047 6577 6047 6577 6047 64777 6047 64777 6047 647777 6047 647777777777777777777777777777777777	139 121 127 200 200	218 217 330 337 321	401 401 373 368 921 425 623	015 d015)3 237 249 237 352 358 358	135 141 129 214 221	(dOLS)3 134 150 132 214 219 210	207	135 135 135 137 222 205	(do15) 133 157 137 213 221 209	015 dots) 121 113 201 206
Search step Task type	Human Species	% Subject	similar Search type	a c c c c c c c c c c c c c c c c c c c	900 4113 3995 4774 542 614 645	95 95 105 95 1111	4015+09-09 109 93 125 98 1114 102	Gst 188 2352 282 329 376 188 235 282 329 376 141 188 235 282 329 376 141 188 235 282 329 376 141 188 235 282 329 376 141 188 235 282 329 376 141 188 235 282 232 376 141 188 235 282 232 376 141 188 235 282 232 376 141 188 235 282 232 376 141 188 235 282 232 376 141 188 235 282 232 376 141 188 235 282 232 376 141 188 235 282 232 376 141 188 235 282 232 376 141 188 235 282 232 376 141 188 235 282 232 376 141 188 235 282 232 376 141 188 235 282 232 376 141 188 235 282 232 376 141 188 235 282 232 376 141 188 235 282 237 376 141 188 235 282 237 376 141 188 235 282 237 376 141 188 235 282 237 376 141 188 235 282 237 376 141 188 235 282 237 376 141 188 235 282 237 376 282 232 376 282 232 376 282 232 376 282 232 376 282 232 376 282 232 376 282 232 376 282 232 376 282 232 376 282 232 376 282 232 376 282 232 376 282 232 376 282 232 376 282 232 376 282 232 376 232 29 29 29 29 29 29 29 29 29 29 29 29 29	Percession 0.31 0.46 0.65 0.46 0.53 0.45 0.46 0.58 0.74 0.36 0.54 0.53 0.54 0.54 0.53 0.54 0.54 0.54 0.54 0.54 0.54 0.54 0.54	0.51 0.63 0.73 0.81 0.86 0.58 0.58 0.58 0.69 0.78 0.65 0.78 0.65 0.74 0.81 0.64 0.64 0.64 0.64 0.64 0.67 0.67 0.80 0.87 0.80 0.67 0.80 0.77 0.83 0.87 0.65 0.74 0.84 0.73 0.84 0.73 0.85 0.55 0.74 0.74 0.74 0.74 0.84 0.75 0.75 0.75 0.75 0.75 0.75 0.75 0.75	09 dots 00 0.18 0.35 0.54 0.26 0.44 0.79 0.20 0.20 0.20 0.20 0.39 0.20 0.39 0.20 0.39 0.20 0.39 0.20 0.39 0.20 0.39 0.39 0.39 0.39 0.39 0.39 0.39 0.3	0.18 0.36 0.57 0.71 0.83 0.45 0.45 0.45 0.45 0.45 0.45 0.45 0.45	Paraseq 409 399 395 461 453 478	9 4 4 4 4 4 4 5 3 5 2 4 5 3 5 2 4 5 3 5 2 4 5 5 4 5 5 5 5 5 5 5 5	00 d01 4 402 4 401 4 464 4 457 4 479 4	Put state 301 284 313 284 314 319 314 319 314 319 314 319 314 319 314 311 311 311 312 354 422 354 314 319 315 311 311 311 312 314 314 323 355 316 314 312 315 311 311 311 312 314 314 315 315 316 316 316 317 316 318 316 318 316 318 316 318 316 318 316 318 316 318 316 318	Op Og 352 371 388 403 415 355 371 389 402 413 354 354 371 389 402 413 354 354 401 412 402 441 456 4481 410 456 4810 458 4453 459 4453 459 4453 459 4453 459 4453 459 459 450 459 450	09-4015-009 2966 323 347 384 309 333 354 331 335 335 335 335 335 335 335 335 335	013+009-03 3000 324 347 367 384 325 344 325 384 325 384 301 326 349 368 349 368 349 368 349 368 349 368 349 368 349 368 369 369 369 369 369 369 369 369	paras 445 483 514 448 504 448 575 610 453 605 602 656 656 656 658 685 571 517 517 517 517 517 517 517 517 51	O9.09 427 473 519 565 531 562 438 485 531 562 426 473 519 565 611 496 547 502 633 639 685 547 593 639 685 547 559 636 630 630 630 630 630 630 630 630 630	974015*05 431 4766 521 5655 6099 4466 5355 5679 6233 4400 482 5255 5667 609 515 5667 609 515 5651 607 5515 5651 609 7433 515 5651 5652 609 743 515 565 609 743 515 565 609 743 517 565 567 609 603 603 603 603 603 603 603 603	019+009-009 4299 476 523 570 617 443 490 537 537 537 537 537 537 537 537	139 121 127 200 209	218 217 217 330 337	401 401 373 368 921 425 623	015 d015)3 237 249 237 3552 3558 3554	L ys1 135 141 129 214 221 206	(dOLS)3 134 150 132 214 219 210	205 207	135 135 137 137 213 222 205	(do15) 133 157 137 213 221 209	015 d015) 121 130 201 206

Table 1, continued χ2 STOP GO-GC GO-STO -GO (STOP | STOP < GO) (STOP | STOP < GO) STOP | STOP < GO)
 OC
 <thOC</th>
 OC
 OC
 OC</ 9-GO+STOP 0-STOP-GO -STOP-GO 30-G0+STOP D-STOP-GO 0-STOP-GO 0-GO+STOF Task type search type STOP) (STOP) STOP) pecies iet size 30-60 09-0 09-00 00
 b
 6
 0
 0
 0

 885
 264
 260
 256
 264
 260
 256
 271
 264
 264
 271
 268
 271
 258
 288
 277
 256
 286
 277
 276
 280
 261
 277
 276
 287
 277
 276
 287
 2309
 304
 291
 146
 251
 309
 304
 291
 299
 111
 290
 308
 297
 308
 327
 308
 326
 281
 307
 306
 325
 286
 277
 308
 328
 289
 308
 328
 281
 306
 326
 281
 306
 328
 289
 308
 328
 289
 308
 328
 328
 328
 328
 328
 328
 328
 328
 328
 328
 328
 328
 328
 328
 328
 328
 328
 328
 328
 328
 328
 328
 328
 328
 <
 PI
 G
 S
 S
 S
 C

 1
 0.34
 0.5
 0.71
 0.58
 0.52

 94
 0.51
 0.71
 0.75
 0.75
 0.75

 1
 1
 0.75
 0.84
 0.75
 0.71
 0.74

 1
 1
 0.75
 0.76
 0.74
 0.74
 0.74
 0.74

 1
 0.17
 0.19
 0.75
 0.76
 0.74
 0.74

 1
 0.17
 0.19
 0.75
 0.76
 0.74
 0.74

 1
 0.17
 0.78
 0.86
 0.75
 0.76
 0.74

 1
 0.17
 0.78
 0.87
 0.76
 0.74
 0.76
 0.74

 1
 0.17
 0.70
 0.78
 0.87
 0.77
 0.76
 0.77
 0.76
 0.77

 1
 0.17
 0.70
 0.78
 0.78
 0.78
 0.78
 0.78
 0.78
 0.78
 0.78
 0.78
 0.78
 0.78
 242 204 220 328 256 similar 44 380 343 206 305 18 364 323 160 2 13 165 120 154 124 267 183 223 182 198 160 00+STOP (00) > 4015 (4018) E(STOP) TOP 157

Table 2

Correlation between intersaccade interval (ISI) and reprocessing time (RPT) for all subjects and conditions. The left column indicates correlations for noncompensated saccades and right column indicates correlations for partially compensated saccades. Note prevalence of negative correlations indicating parallel processing of saccades. Starred correlation values indicate significance at p < 0.05 level.

	Subject	Simiarity	Set size	Noncompensated	Partially compensated
Double step	CC	n/a	n/a	-0.78*	-0.42
	LB	n/a	n/a	-0.69*	-0.46*
	SS	n/a	n/a	-0.87*	-0.60*
Search step	CC	disimilar	2	-0.84*	-0.76*
-			4	-0.81*	-0.58*
			8	-0.86*	-0.86*
		similar	2	-0.47*	-0.28
			4	-0.36*	0.08
			8	-0.34*	-0.07
	LB	disimilar	2	-0.39*	-0.84*
			4	-0.07*	-0.73*
			8	-0.69*	-0.65*
		similar	2	-0.15*	-0.05
			4	-0.15*	-0.62*
			8	-0.29*	0.05
	SS	disimilar	2	-0.84*	-0.97*
			4	-0.85*	-0.77*
			8	-0.79*	-0.52*
		similar	2	-0.44*	-0.25
			4	-0.53*	0.06
			8	-0.32	-0.43

NIH-PA Author Manuscript

Table 3

Best fitting distribution parameters for the three competing race architectures. Rows list each task by species, subject and search condition, further divided by GO1, GO2, or STOP process. Columns indicate race architecture, chi squared fit value, and Weibull shape, scale and location parameters that describe best fitting finish time distributions of that process with the mean and variance of the finish times of each process.

Tab	le 3																						
	8							GO-	GO					GO-ST	OP-GO					GO-GO	O+STOP		
	Species	Subject	Search typ	Set size	Process	χ2	Shape (α)	Scale (β)	Location ()	Mean	Variance	χ2	Shape (α)	Scale (β)	Location ()	Mean	Variance	χ2	Shape (α)	Scale (β)	Location ()	Mean	Variance
	v	ch	n/a	n/a	GO1 GO2 STOP	1564	1.0 1.8	119 54	137 154	256 202	119 28	225	2.3 1.3 1.1	80 25 59	122 94 55	193 117 112	33 18 52	215	2.2 1.5 1.6	77 47 89	124 157 29	192 199 109	33 29 51
	Monke	fc	n/a	n/a	GO1 GO2 STOP	7993	1.1 2.0	143 96	146 127	284 212	126 44	498	2.1 1.6 1.3	84 72 30	139 66 56	213 131 84	37 41 21	471	2.2 1.8	83 84 23	139 131 61	213 206 84	35 43 23
		ly	n/a	n/a	GO1 GO2	3458	1.0 2.1	195 122	207 145	402 253	195 54	453	1.7 1.7	120 90	197 94	304 174	65 49	441	1.7 1.9	115 114	200 148	303 249	62 55
ole step		сс	n/a	n/a	G01 G02	690	1.5 6.8	140 146	108 59	234 195	86 24	65	3.0 3.4	142 78	73 27	200 97	44	67	2.8	135 80	80 119	200 191	46 24
Dout	Human	LB	n/a	n/a	GO1 GO2	668	1.4 2.4	176 89	132 132	292 211	116 35	74	2.8 2.6 2.4	30 176 71	95 61	96 251 124	10 65 28	76	1.0 2.6 2.4	16 178 87	93 131	97 251 208	16 65 34
		SS	n/a	n/a	GO1 GO2	806	1.7 2.5	156 91	171 123	310 204	84 35	70	1.8 3.3 1.2	46 162 39	49 130 61	90 275 98	24 48 31	69	1.0 3.8 1.8	31 182 66	62 111 138	93 275 197	31 48 34
		ch	milar	8	STOP GO1 GO2	7766	1.0	110	164 160	274	110	772	2.5 1.7 5.8	48 65 84	61 159 35	104 217 113	18 35 16	500	1.4 1.8 2.0	28 62 62	78 158 160	104 213 215	18 32 29
	lonkey	fc	nilar disi	8	STOP GO1	5287	1.0	121	160	281	121	873	1.2	69 78	68 155	133 226	54 51	811	1.7	133 77 97	14 155	133 225 216	72 51
	2	ly	ailar disir	8	STOP GO1	3869	0.9	99	195	220	116	256	2.0	131 62	26 185	142 240	61 29	275	1.7	166 61	130 8 186	156 240	90 30
arch step		сс	disim	2	GO2 STOP GO1	436	2.5	112	143	242 320	43 94	45	2.8 1.2 2.6	84 116 159	51 62 149	126 171 290	29 91 58	44	2.5 1.6 2.4	109 183 151	140 11 157	237 175 291	41 105 59
Se	Human		ar	4	GO2 STOP GO1	481	1.7	76 179	173	241 325	41	110	1.0 1.1 2.8	35 39 183	61 112 125	96 150 288	35 34 63	98	1.5 1.0 3.4	62 38 217	177 114 91	233 152 286	38 38 63
			disimi	8	GO2 STOP	529	2.2	99	161	249	42	235	2.1	64 70	57 85	114 150 281	28 50	234	2.0	88 80	163 78	241 150 281	41 49 75
					G02	020	1.6	82	167	241	47	200	1.1	55	37	90	48	204	1.1	59	176	233	52
					STOP	7							2.1	26	122	145	12		2.3	46	103	144	19
Tab	le 3,	con	tinue	ed	STOP			GO	-G0				2.1	26 GO-S1	122 TOP-GO	145	12		2.3	46 GO-G	103 D+STOP	144	19
Tab	le 3,	pject	arch type	t size pe	STOP		ape (α)	ale (β)	cation (µ) Ô	an	riance		2.1 (p) ede	26 GO-ST	cation (r)	145 ug	riance		2.3 (α)	46 31e (g) 31e (g)	103 C+STOP cation (r)	144 E	19 Liance
Tab	species	Subject	Search type	v Set size	STOP STOP	x2 219	(a) Shape (a)	60 Scale (8) 103 263	Cocation (h) OO	иеам 300 244	55 89 Variance	x2 82	2.1 (a) (a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c	26 GO-S1 B Scale (B) 96 67	122 TOP-GO (r) 200 0	145 weaw 285 60	21 Pariance	x2 93	2.3 2.3 8 1.8 3.5	64 0-00 88 88 198	103 D+STOP (1) Unception (1) 198 59	144 weew 285 237	61 02 03 05
Tab	species	Subject	llar Search type	2 Set size	STOP GO1 GO2 STOP GO1 GO2	X2 219 273	(a) 1.4 5.0 1.1	60 (g) 103 263 111 1156	-GO (1) 206 3 221 154	це 300 244 328 293	example 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2010 - 2	x2 82 64	2.1 (c) edety 2.1 (c) edety 3.1 1.8 1.8 3.1 1.5 0.7	26 GO-S1 (8) 96 67 202 99 43	122 TOP-GO (T) 100 100 100 100 100 100 100 10	145 Lee W 285 60 204 304 70	12 12 49 34 64 61 80	x2 93	2.3 (a) adjust (a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c	46 GO-G (8) 98 198 178 100 134	103 D+STOP (1) uojteco (1) 198 59 105 214 159	144 144 285 237 267 304 279	19 Cariance 02 03 04 05 05 05 05 07 117 01 77 01 07 07 07 07 07 07 07 07 07 07
Tab	species	Subject	similar Search type	ed 2 Set size 4 8	GO1 GO1 GO2 STOP GO1 GO2 STOP GO1	x2 219 273	(c) 1.4 5.0 1.1 1.7	GO (g) argo 1 03 263 1111 156 156	GO (f) uotation 206 3 2211 154 218	це 300 244 328 293 382	88 55 97 84 88 183	x2 82 64 47	2.1 (c) ederys 1.8 1.8 3.1 1.5 0.7 2.9 1.1	26 GO-S1 (g) ereo 96 67 202 99 43 153 132	122 TOP-GO (1) uopport 200 0 23 215 16 83 216 83 216	145 Lee 285 60 204 304 70 219 343	12 9 49 34 61 80 51 116	x2 93 66 48	2.3 (b) edge 1.8 3.5 1.4 1.5 1.6 2.8 1.1	46 GO-GI eg 98 198 178 100 134 227 135	103 D+STOP (a) uoppool 198 59 105 214 159 54 216 216	144 285 237 267 304 279 256 346	19 50 56 117 61 77 78 119
Tab	le 3,	CC Subject DD	similar Search type	ed ^{eziss} 2 4 8 2	510P 510P 500 500 510P 500 500 500 500 500 500 500 5	x2 219 273 151 749	(c) edey 1.4 5.0 1.1 1.7 0.9 1.6 1.7	GO (3) eress 103 263 1111 156 229 180	GO (1) uotecoor 2006 3 2211 154 218 142 204	EE 300 244 328 293 382 347 365	97 84 183 131 97	x2 82 64 47	2.1 (b) edgeys 1.8 1.8 3.1 1.5 0.7 2.9 1.1 1.3 3.3	26 GO-S1 96 67 202 99 43 153 132 120 151 173	122 TOP-GO (1) uotitication 200 0 233 215 16 83 216 11 114 169	145 285 60 204 70 219 343 127 253 324	12 a your bit and a second s	x2 93 66 48 94	2.3 (v) adety 1.8 3.5 1.4 1.5 1.6 2.8 1.1 1.5 1.1 3.9	46 GO-G 98 198 178 100 134 227 135 212 189 189	103 D+STOP (a) uojteoo 198 59 105 214 159 54 216 151 123 153	144 285 237 267 304 279 256 346 342 305 324	19 50 56 117 61 77 78 119 130 166 49
Tab	le 3,	cont snpject CC LB	liar similar Search type anur	ed ⁹ zisis 8 2 4 4 4	GO1 GO2 STOP GO1 GO2 STOP GO1 GO2 STOP GO1 GO2 STOP GO1 GO1 GO1 GO1 GO1 GO1 GO1 GO1 GO1 GO1	x2 219 273 151 749 567	(c) ederys 1.4 5.0 1.1 1.7 1.6 1.6	60 (g) 9 9 5 5 5 5 5 5 5 5 5 5 5 5 5	-GO (1) uotreso 206 3 221 154 218 142 204 192 214	вери 300 244 328 293 382 347 365 264 363	97 84 183 131 97 46 95	x2 82 64 47 109	2.1 (c) edery 5 1.8 1.8 1.8 1.8 1.8 1.5 0.7 2.9 1.1 1.1 1.3 3.3 1.1 2.0 3.4	26 GO-S1 (2) 97 96 67 202 99 43 153 132 120 151 173 44 70 193	122 TOP-GO (a) uojteco 200 0 23 215 16 83 216 11 114 169 66 99 159	145 285 60 204 304 70 219 343 127 253 324 108 161 332	12 a a b a b a b c b c c c c c c c c	x2 93 66 48 94	2.3 (2) edetys 1.8 3.5 1.4 1.5 1.6 2.8 1.1 1.5 1.1 3.9 1.4 2.4 3.1	46 GO-GO 98 198 178 100 134 227 135 212 189 189 66 112 173	103 D+STOP (a) uojteoo 198 59 105 214 159 54 216 151 123 153 194 61 176	144 285 237 267 304 279 256 346 342 305 324 254 254 254 324 254 324 253 324 253 324	90000000000000000000000000000000000000
Tab	becies	cont Subject CC	disimilar Search type	ed ^{97,157} ¹⁶⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹⁷⁰ ¹	510P 510P 500 500 510P 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P	x2 219 273 151 749 567 605	(a) address (b) address (c) ad	60- (g) erec: 103 263 1111 156 229 180 80 166 85 239	GO (1) upperson 206 3 221 154 218 142 204 192 214 163 141	500 244 328 293 382 347 365 264 363 240 353	90000000000000000000000000000000000000	x2 82 64 47 109 120	2.1 (c) adverts 1.8 1.8 1.8 3.1 1.5 0.7 2.9 1.1 1.1 1.3 3.3 1.1 2.0 3.4 1.2 3.8	26 GO-S1 996 67 202 99 43 153 153 153 153 153 151 151 173 44 70 193 53 64 64 265	122 TOP-GO 3 5 5 6 1 1 1 1 1 1 1 1	145 Egy 285 60 204 304 304 127 253 324 108 161 332 92 92 163 325	12 a b b c b c c c c c c c c	x2 93 66 48 94 124 231	2.3 (c) ed ery 1.8 3.5 1.4 1.5 1.6 2.8 1.1 1.5 1.1 3.9 1.4 2.4 3.1 1.5 2.0 3.2	46 GO-G (3) 98 198 198 100 134 227 135 212 189 189 66 112 173 82 173 82 173 82 173 82 173 82 173 82 173 82 173 82 173 82 173 82 173 175 175 175 175 175 175 175 175	103 D+STOP (3) 59 105 214 159 214 216 151 153 153 194 61 176 106 117	144 E 2 2 2 2 2 2 2 2	19 ocurpius 50 56 117 61 77 130 166 49 44 44 55 50 55 72
Search step	Human Recies	cont to a figure CC	disimilar Search type	ed ^{971s} teo 2 4 4 8 8 2 2	510P 510P 601 602 510P 601 602 510P 601 602 510P 601 602 510P 602 510P 602 510P 602 510P 602 510P	x2 219 273 151 749 567 605	© 9 9 9 9 9 9 1 1.4 1.4 5.0 1.1 1.7 1.6 1.6 1.5 2.2 1.6 1.4 1.5 1.7 1.7 1.6 1.5 1.5 1.4 1.7 1.7 1.6 1.5 1.4 1.5 1.4 1.7 1.4 1.7 1.4 1.7 1.6 1.7 1.7 1.6 1.7 1.6 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	60 (a) e 3 103 263 1111 156 229 180 80 166 85 239 96 136	GO (1) 206 3 221 154 218 142 204 192 214 163 141 140 250	500 500 500 500 500 500 500 500	00000000000000000000000000000000000000	x2 82 64 47 109 120 182	2.1 (a) (b) (c) (c) (c) (c) (c) (c) (c) (c	26 GO-S1 96 97 96 67 202 99 43 153 153 153 153 151 173 44 173 44 70 193 53 64 265 37 80 119	122 TOP-GO (3) 5) 5) 5) 10 10 11 114 169 66 6 11 114 169 16 11 114 169 16 11 114 169 16 11 114 159 13 13 14 159 13 13 13 14 159 13 139 14 14 159 139 139 14 14 159 159 14 130 130 159 141 159 159 141 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 175 1	145 285 60 204 304 70 219 332 43 324 127 253 324 108 161 332 92 92 92 83 325 83 325 83 446	12 9 9 12 12 12 12 12 12 12 12 12 12 12 12 12 12 13 16 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 105 10	x2 93 66 48 94 124 231	2.3 (c) adeuty 1.8 3.5 1.4 1.5 2.0 3.2 1.8 1.6 2.0 3.2 1.8 1.6 2.0 3.2 1.8 2.0 3.2 1.8 1.5 3.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 1.5 1.4 2.0 1.5 1.4 2.0 1.5 1.4 2.0 1.5 1.5 1.4 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 2.0 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	46 GO-G 9 98 178 100 134 227 135 212 212 189 66 112 1173 82 97 81 128 178 102 112 123 97 81 126 126 126 126 127 126 127 126 127 127 127 127 127 127 127 127	103 D+STOP (a) b b b c c c c c c c c	144 285 237 304 279 256 367 304 279 256 342 305 324 160 331 235 165 1326 218 154	19 50 50 56 117 61 130 0 55 51 119 130 0 49 44 44 44 44 44 55 55 55 55 55 55 55 55
Search step	Human Human	cont transformer ccc	disimilar similar Search type	2 2 4 4 8 8 2 2 4 4 1 2	\$10P \$30P \$601 \$601 \$601 \$602 \$510P \$601 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602 \$602	x2 219 273 151 567 605 275	(c) edgy 1.4 5.0 1.1 1.7 1.6 1.7 1.6 1.7 1.6 1.5 2.2 1.6 1.4 2.9 2.9	60 6 9 8 9 8 9 103 263 111 156 229 180 80 166 85 239 96 136 172 172	GO (a) uoppeoor 2006 3 2221 154 218 142 204 192 214 163 141 140 250 139 200	500 244 328 293 382 347 365 264 363 240 353 226 374 292	90000000000000000000000000000000000000	x2 82 64 47 109 120 182 55	2.1 (c) ad registration (c) additional (c) addition	26 GO-S1 6 96 67 202 99 96 67 202 99 943 153 132 132 132 132 133 132 133 132 133 132 133 134 135 132 137 137 137 137 137 137 137 137	122 TOP-GO a b b c c c c c c c c	145 285 60 204 304 304 127 253 324 108 161 332 92 253 324 161 181 332 92 253 324 163 163 164 74 233 146	12 30 30 31 34 64 64 64 64 64 65 52 39 32 36 56 38 50 56 38 50 51 52 39 32 56 38 50 51 51 52 39 32 56 38 50 51 57 39 32 56 38 50 51 57 39 32 57 57 38 50 57 38 50 51 51 51 52 38 50 53 31 58 58 59 59 59 51 51 51 56 53 31 58 58 50 51 51 51 52 38 55 53 31 58 58 58 58 59 59 59 59 50 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 51 5	x2 93 66 48 94 124 231 54	2.3 (c) aderty 1.8 3.5 1.4 1.5 1.6 2.8 1.1 1.5 1.1 1.5 1.1 1.5 1.1 1.5 1.1 1.5 1.4 2.4 3.1 1.4 2.4 3.1 1.4 2.4 3.2 1.8 3.2 1.8 3.2 1.8 2.0 2.0 2.0 2.0 2.1 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0	46 GO-G 98 198 198 198 198 198 198 100 134 227 212 199 66 112 199 66 112 173 82 119 97 81 128 97 81 129 97 81 129 97 81 129 97 81 129 129 129 129 129 129 129 12	103 +\$TOP (a) 59 105 214 216 151 153 194 161 161 161 161 161 132 81 173 98 98 94	144 285 237 267 304 256 346 342 345 324 256 324 256 324 255 324 255 165 218 154 326 218 154 267 267 202	50 50 50 50 56 117 77 78 119 1130 116 61 77 78 44 44 44 44 44 55 50 50 50 50 61 61 77 78 61 77 78 61 50 50 50 50 50 50 50 50
Search step	Human Species	coni snpiect CC	similar disimilar Search type annuit	ed	\$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100 \$100	x2 219 273 151 567 605 275 481	(c) edges (c)	GO (a) (b) (c)	GO (a) (a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c	500 244 328 293 382 347 365 264 363 240 353 226 353 226 374 292 373 300	97 84 183 131 97 46 95 52 102 55 90 57 104 68	x2 82 64 47 109 120 182 55 61	2.1 () 0 0 0 0 0 0 0 0 0 0 0 0 0	26 GO-S1 (a) 96 67 202 202 202 153 153 153 153 151 151 151 153 564 64 127 127 139 56 64	122 (OP-GO (a) (b) (c) (c) (c) (c) (c) (c) (c) (c	145 145 204 204 204 70 219 304 70 213 324 108 161 332 163 325 346 346 346 347 233 337 92 211	12 30 30 49 34 64 61 105 105 105 105 105 105 39 32 56 38 50 70 32 55 31 53 31 53 31 55 40 55 50 50 50 55 55 65 55 55 55 55 55 55 55	x2 93 66 48 94 124 231 54 63	2.3 3.9 1.8 3.5 1.4 1.5 2.0 2.1 1.2 1.2 1.2	46 GO-G 9 98 98 198 198 100 134 178 100 134 227 135 227 135 212 227 139 189 66 112 113 129 119 233 97 119 112 113 81 129 198 198 81 81 81 81 81 81 81 81 81 8	103 +STOP 5 5 5 5 5 5 5 5 105 159 159 159 159 159 159 151 151	144 285 285 287 304 279 286 342 334 254 335 324 254 335 326 333 165 185 218 215 326 218 215 326 218 215 326 227 336 228 227 336 227 228 227 228 227 228 228 228 228 228	19 Sourceyus 50 56 56 117 61 77 8 119 130 61 77 8 49 44 44 45 55 55 55 55 55 55 55
Search step	Human Human	con mpjert CC	similar disimilar similar Search type	2 4 4 8 2 4 4 8 8 8 2 4 8	**************************************	x2 219 273 151 749 567 605 275 481 411	© 0 1.4 5.0 1.1 1.7 0.9 1.6 1.7 1.6 1.6 1.5 2.2 1.6 1.4 2.9 1.4 1.4 1.3 1.4	GO Image: Constraint of the second	GO () 1 206 3 221 154 218 142 204 192 214 163 141 140 250 139 229 206 229 206 239 209 209 209 209 209 209 209 20	Egg 300 244 328 293 382 347 365 264 363 226 374 292 373 300 367 288	68 55 97 84 183 131 97 46 95 52 102 55 90 57 104 68 126 74	x2 82 64 47 109 120 182 55 61 64	2.1 (a) ad ergs 1.8 1.8 1.8 1.5 0.7 2.9 1.1 1.1 1.3 3.3 1.1 2.0 3.4 1.2 3.8 2.4 1.2 2.2 2.3 8 0.8 2.4 1.2 2.2 2.3 1.0 1.3 1.6 0.0 8 2.4 1.8 1.8 1.8 1.8 1.8 1.1 1.1 1.1 1.1 1.1	26 GO-S1 9 9 9 6 67 202 99 9 6 7 202 99 43 152 151 173 152 151 173 154 173 154 173 154 173 153 154 170 154 170 154 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 155 170 170 170 170 170 170 170 170	122 122 100-GO 1 uspegod 200 0 23 215 16 33 216 111 169 66 33 216 114 169 159 43 85 41 103 85 240 260 215 215 215 216 216 216 217 215 216 216 216 217 216 216 217 216 216 217 216 216 216 216 216 216 216 216	145 285 285 60 204 304 70 219 343 324 108 161 127 253 324 108 161 127 253 324 108 161 232 325 83 325 83 346 74 233 337 92 241 327 196	12 30 34 49 34 64 64 64 651 116 105 105 52 39 32 56 33 32 56 33 32 56 33 50 70 53 31 58 40 54 54 55 50 50 50 50 50 50 50 50 50	x2 93 66 48 94 124 231 54 63 65	2.3 () edget 3 1.8 3.5 1.4 1.5 1.6 2.8 1.1 1.5 1.4 2.1 1.5 1.4 2.4 1.5 1.4 2.4 1.5 1.4 2.4 1.5 1.4 2.1 1.5 1.4 2.1 1.5 1.4 2.1 1.5 1.4 2.1 1.5 1.4 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1 2.1	46 GO-GI 9 98 100 98 100 98 100 134 227 135 134 227 135 66 112 139 82 119 97 138 82 138 128 128 128 138 128 134 121 135 128 138 134 121 135 128 138 134 121 135 134 134 134 134 134 134 134 134	103 () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () ()() () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () () ()()()()()()()()()()	144 245 245 267 304 256 342 305 342 305 342 324 254 165 218 331 235 218 336 284 284 284 284 285 218 336 286 218 336 287 336 287 336 287 336 283 342 285 285 285 285 285 285 285 285 285 28	19 90000000 500 500 500 560 1117 61 117 78 119 119 1100 1100 1110 1120 1130 1166 49 44 44 44 44 44 44 55 500 555 500 555 56 65 56 657 64 658
Cearch step	Human Species	Continue of the second	similar disimilar similar Search type	ed ³²³ ²³ ² ² ⁴ ⁴ ⁸ ⁸ ² ² ⁴ ⁴ ⁸ ⁸ ² ² ⁴ ⁴ ⁸ ⁸ ² ² ² ⁴ ⁴ ⁸ ⁸ ² ² ² ⁴ ⁴ ⁸ ⁸ ² ² ² ⁴ ⁴ ⁸ ⁸ ² ² ² ⁴ ⁴ ⁸ ⁸ ² ² ⁴ ⁴ ⁸ ⁸ ² ² ⁴ ⁴ ⁸ ⁸ ² ² ⁴ ⁴ ⁸ ⁸ ² ² ² ⁴ ⁴ ⁸ ⁸ ² ² ⁴ ⁴ ⁸ ⁸ ² ² ² ⁴ ⁴ ⁸ ⁸ ² ² ² ⁴ ⁴ ⁸ ⁸ ² ² ⁴ ⁸ ⁸ ² ² ⁴ ⁸ ⁸ ² ² ² ⁴ ⁸ ⁸ ⁸ ⁸ ⁸ ² ² ⁴ ⁸ ⁸ ⁸ ² ² ⁴ ⁸ ⁸ ⁸ ⁸ ⁸ ⁸ ⁸ ⁸	stop see see see stop stop <td>x2 219 273 151 749 567 605 275 481 411 413</td> <td>(b) active 1.4 5.0 1.7 1.6 1.7 1.6 1.7 1.6 1.7 1.6 1.7 1.6 1.7 1.6 1.7 1.6 1.7 1.6 1.4 2.9 1.4 1.3 1.4 2.9</td> <td>60 (a) 103 263 1111 1156 156 229 180 80 166 85 239 96 136 172 158 103 103 263 103 263 103 263 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 105 105 105 105 105 105 105 10</td> <td>GO G 3 206 3 221 154 218 142 214 163 139 2206 39 214 163 163 139 206 229 139 206 229 193 255 154</td> <td>500 500 500 500 500 500 500 500</td> <td>90000000 688 555 977 84 1833 1331 977 46 955 52 102 557 104 68 126 74 147 34</td> <td>x2 82 64 47 109 120 182 55 61 64 96</td> <td>2.1 (c) adgress (c) adgress (c</td> <td>26 GO-\$1 (a) 96 97 99 99 99 99 99 99 99 99 153 132 120 151 132 120 151 132 133 53 64 45 57 70 193 53 56 64 111 127 135 56 64 111 127 135 56 64 111 127 135 56 64 111 127 135 135 135 135 135 135 135 135</td> <td>122 122 122 122 122 122 120 120</td> <td>Id5 285 200 204 304 70 253 343 127 253 324 108 332 92 92 146 343 146 343 146 343 146 337 92 211 322 95 196 413 114 135</td> <td>12 Sureius 49 49 44 61 64 61 85 108 52 39 32 56 38 50 70 53 33 116 53 53 35 8 40 46 4 64 4 52 53 53 51 53 53 53 54 64 4 52 53 53 53 53 54 55 55 55 55 55 55 55 55 55</td> <td>x2 93 66 48 94 124 231 54 63 65 109</td> <td>2.3 (c) address (c) (c) (c) (c) (c) (c) (c) (c) (c) (c)</td> <td>46 GO-GO 98 98 178 100 134 125 212 189 66 112 173 82 173 82 173 83 83 83 85 111 191 91 91</td> <td>103 103 103 103 103 103 108 59 214 105 105 105 105 105 105 105 105</td> <td>144 144 265 2237 237 267 304 279 266 332 346 342 334 335 255 324 255 326 331 235 326 327 288 223 2237 288 2237 288 2237 288 2237 288 2237 288 2237 289 221 277 198 241 133</td> <td>19 90 50 50 56 117 61 77 78 119 130 166 44 55 55 55 56 67 92 56 67 56 65 65 65 58 93 35 31</td>	x2 219 273 151 749 567 605 275 481 411 413	(b) active 1.4 5.0 1.7 1.6 1.7 1.6 1.7 1.6 1.7 1.6 1.7 1.6 1.7 1.6 1.7 1.6 1.7 1.6 1.4 2.9 1.4 1.3 1.4 2.9	60 (a) 103 263 1111 1156 156 229 180 80 166 85 239 96 136 172 158 103 103 263 103 263 103 263 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 103 265 105 105 105 105 105 105 105 10	GO G 3 206 3 221 154 218 142 214 163 139 2206 39 214 163 163 139 206 229 139 206 229 193 255 154	500 500 500 500 500 500 500 500	90000000 688 555 977 84 1833 1331 977 46 955 52 102 557 104 68 126 74 147 34	x2 82 64 47 109 120 182 55 61 64 96	2.1 (c) adgress (c) adgress (c	26 GO-\$1 (a) 96 97 99 99 99 99 99 99 99 99 153 132 120 151 132 120 151 132 133 53 64 45 57 70 193 53 56 64 111 127 135 56 64 111 127 135 56 64 111 127 135 56 64 111 127 135 135 135 135 135 135 135 135	122 122 122 122 122 122 120 120	Id5 285 200 204 304 70 253 343 127 253 324 108 332 92 92 146 343 146 343 146 343 146 337 92 211 322 95 196 413 114 135	12 Sureius 49 49 44 61 64 61 85 108 52 39 32 56 38 50 70 53 33 116 53 53 35 8 40 46 4 64 4 52 53 53 51 53 53 53 54 64 4 52 53 53 53 53 54 55 55 55 55 55 55 55 55 55	x2 93 66 48 94 124 231 54 63 65 109	2.3 (c) address (c)	46 GO-GO 98 98 178 100 134 125 212 189 66 112 173 82 173 82 173 83 83 83 85 111 191 91 91	103 103 103 103 103 103 108 59 214 105 105 105 105 105 105 105 105	144 144 265 2237 237 267 304 279 266 332 346 342 334 335 255 324 255 326 331 235 326 327 288 223 2237 288 2237 288 2237 288 2237 288 2237 288 2237 289 221 277 198 241 133	19 90 50 50 56 117 61 77 78 119 130 166 44 55 55 55 56 67 92 56 67 56 65 65 65 58 93 35 31
Construction of the second sec	Human Human	CCC LB	lisimilar similar dismilar similar search type annun	ed ⁹⁷³ / ₅₅ to 2 4 4 8 8 2 4 4 8 8 2 4 4 8 8 2 4 4 4 8 8 7 2 4 4 8 8 8 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8	STOP Stop CO1 GO1 GO2 STOP GO2 STOP GO1 GO2 STOP GO2 STOP GO2 STOP GO2 STOP GO2<	x2 219 273 151 567 605 275 481 411 413 395	(a) edgy 1.4 5.0 1.1 1.7 1.6 1.5 1.6 1.5 2.2 1.6 1.4 2.9 1.4 1.4 1.4 1.4 1.4 1.4 2.9 1.4 2.9 1.4 2.9 1.4 2.9	GO (a) a) a)<	GO G 206 3 221 154 218 142 214 163 1221 214 163 229 206 229 2255 154 258 168	Eg Solo 300 244 328 293 342 343 365 264 365 264 363 226 374 222 373 300 367 288 458 245 447 257	90000000000000000000000000000000000000	x2 82 64 47 109 120 182 55 61 64 96 95	2.1 (a) address 1.8 3.1 1.5 1.7 2.9 1.1 1.3 1.1 1.3 1.1 1.3 3.4 1.2 3.4 1.2 3.4 1.2 3.4 1.2 2.2 2.3 1.0 1.0 1.1 1.2 2.2 2.3 1.0 1.0 1.0 1.1 1.2 2.2 2.2 2.2 2.2 2.4 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	26 GO-S1 96 97 90 97 90 97 90 97 90 97 90 97 90 97 90 97 90 97 90 97 90 97 90 90 153 153 153 153 153 153 153 153	122 122 122 122 200 0 215 16 13 216 111 114 169 69 159 43 103 85 41 264 264 264 264 264 264 264 264 264 264 264 264 264 264 264 264 264 264 266 78 49 206 74 49 270 74 49 49 270 74 49	145 145 285 60 204 304 70 243 343 127 328 161 332 163 322 83 146 332 343 146 337 92 143 337 95 196 413 132 1414 135 146	12 egump 49 49 49 49 49 49 49 49 49 49	x2 93 66 48 94 124 231 54 63 65 109 93	2.3 (a) address (b) address (c) address	46 GO-G 98 198 178 98 178 100 134 177 227 115 212 227 135 212 213 82 119 128 138 82 138 83 85 111 199 200 82 91 213 86 213 82 91 100 124 125 126 128 128 128 128 128 128 128 128	103 103 103 103 103 103 103 103	144 144 144 285 285 237 267 267 267 304 279 334 334 335 336 335 336 332 325 155 238 235 154 336 287 233 326 233 232 154 336 285 237 247 245 237 245 235 237 245 237 245 237 245 237 245 237 245 237 245 245 245 245 245 245 245 245 245 245	19 9 90 50 56 117 130 119 130 119 130 49 44 55 50 55 56 57 50 55 56 65 55 93 35 31 84 35 31 84 35 31

Table 3, continued

								GO-	-GO					GO-ST	OP-GO			GO-GO+STOP						
	Species	Subject	Search type	Set size	Process	χ2	Shape (α)	Scale (β)	Location (µ)	Mean	Variance	χ2	Shape (a)	Scale (β)	Location (µ)	Mean	Variance	χ2	Shape (α)	Scale (β)	Location (µ)	Mean	Variance	
		SS		2	G01	542	1.4	289	271	534	191	95	2.4	271	225	465	107	98	2.5	277	219	465	105	
					GO2		1.6	134	258	378	77		1.2	94	78	166	74		1.4	115	264	369	76	
					STOP								1.8	66	155	214	34		1.9	73	148	213	35	
ep	-		-	4	G01	614	1.4	263	285	525	173	111	3.0	282	206	458	92	114	3.2	302	187	457	93	
hst	ma		nila		GO2		2.1	142	253	379	63		1.6	97	71	158	56		1.7	114	267	369	62	
arc	Ŧ		sin		STOP								2.7	74	153	219	26		1.8	29	195	221	15	
Se				8	G01	645	1.8	325	253	542	166	100	3.2	323	190	479	99	102	3.1	308	203	478	97	
					GO2		3.0	195	205	379	63		2.0	124	47	157	57		2.1	135	245	365	60	
					STOP								2.1	41	174	210	18		2.3	44	170	209	18	