

Everyday planning: An analysis of daily time management

DANIEL J. SIMONS and KATHLEEN M. GALOTTI
Carleton College, Northfield, Minnesota

We assessed planning, prioritization, and completion of daily activities for 88 college students. Subjects listed and prioritized their goals for the following day, and 2 days later, they reported their accomplishments. Subjects also defined "planning" in a short essay. Self-reported good and poor planners did not differ in the proportion of goals completed or in sensitivity to goal priority, but definitions of planning did differ.

When you consider all of the things you need to accomplish tomorrow, how do you decide which are the most important? How do you decide which goals must be accomplished and which can be postponed? Realistically, how many goals can be completed in one day? Although these questions focus on possibly trivial aspects of our daily routines, they all involve planning, a process that is essential to almost all decision making and problem solving.

Most research on planning began after seminal work on planning appeared in 1960 (Miller, Galanter, & Pribram, 1960). Recently, researchers of decision making have identified planning as an essential component of problem solving (e.g., Dreher & Oerter, 1987; Klahr & Robinson, 1981; Rogoff, Gauvain, & Gardner, 1987). The general consensus is that, in any novel situation, we must recognize how our goals and the resources that we need to meet them are restricted by our environment or by task demands. Good planning involves the identification of such environmental or problem constraints prior to action.

On the basis of work from several research groups (Hayes-Roth & Hayes-Roth 1979; Miller et al., 1960; Rogoff et al., 1987), we argue that planning is composed of the following: (1) The recognition of a potential goal or set of goals, (2) the mental simulation of possible means of achieving those goals, (3) the identification of potential conflicts among goals or paths to completing those goals, (4) the revision of the original plan to reduce conflicts between goals, and (5) the execution of the plan.

Although planning seems to underlie many of our daily activities, only recently have researchers begun to focus on the planning processes involved in everyday problem solving (e.g., Pea & Hawkins, 1987; Puffer, 1989; Radziszewska & Rogoff, 1991). For example, Dreher and

Oerter (1987) used an errand-scheduling task in which subjects could prioritize given goals by maximizing or minimizing the time that they spent on particular activities. Yet although Dreher and Oerter's study dealt with daily activities and allowed subjects to prioritize their goals, it failed to account for the freedom with which people normally choose and prioritize their goals, and it constrained the number of paths that people could take to accomplish their goals.

STUDY 1

One object of the present studies was to evaluate the planning of everyday activities by allowing subjects to actually list their activities for the next day, thus eliminating some experimenter-imposed constraints on planning. A second goal of this study was to evaluate differences in the strategies of good and poor planners, by using a previously developed survey (Galotti, 1989b) to identify self-reported planning practices and attitudes. "Good" planners were defined as those with positive (relative to the group of subjects tested) attitudes toward planning and more frequent reports of planning activities; "poor" planners were defined conversely.

Finally, subjects were asked to define "planning" in an unstructured essay, modeled after similar tasks in studies of commitments and moral reasoning (Galotti, 1989a; Galotti & Kozberg, 1987). Essays were coded for various themes related to the construct "planning," in order to assess whether good planners define and conceptualize "planning" in different ways than do average or poor planners.

Good and poor planners were expected to differ in a number of ways. In particular, we expected good planners to complete a higher proportion of their goals, to be more sensitive to goal priority in goal completion, and possibly, to conceptualize planning in ways different from those of average and poor planners.

Method

Subjects. The subjects were 88 undergraduate students at Carleton College. Forty-six of the subjects were 1st-year students (20 male, 26 female) and 42 were seniors (21 male, 21 female). Their participation

Portions of this work were completed as partial fulfillment of the Bachelor of Arts degree at Carleton College for the first author, who was supervised by the second. We gratefully acknowledge the assistance of Therese Huston with data analysis and Scott Preston and Lloyd Komatsu for their comments on an earlier draft. Requests for reprints or for copies of instruments used should be sent to Daniel J. Simons, Department of Psychology, William James Hall, 33 Kirkland St., Harvard University, Cambridge, MA 02138.

was voluntary and uncompensated. Three subjects failed to complete the second part of the study and were dropped from any analyses involving variables from the second part of the study.

Materials. The subjects completed several different questionnaires and measures of planning. Although the order of task presentation varied as described in the procedure section below, all subjects completed each of the following tasks (copies are available from the first author). Tasks 3 and 4 were always completed in sequence and were always followed by Task 5, but other tasks were sometimes interspersed between Tasks 3 and 4 and Task 5.

Task 1: Essay task. Subjects were given a full page to respond to the following: "Please define the term 'planning' and describe what 'planning' means to you."

Task 2: Galotti-Simons Planning Survey. Subjects completed a questionnaire about planning practices. The questionnaire was a modified version of a reliable (internal reliability, $\alpha = .84$) survey of common practices, generated from essay responses (similar to that used in Task 1) in a pilot study (Galotti, 1989b). The revised questionnaire, the Galotti-Simons Planning Survey (GSPS), is scored by totaling responses to all questions after negatively keyed items are reversed. Subjects were also given a set of 10 items from a modified version of the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1964; Greenwald & Satow, 1970) to assess the possibility that responses on the GSPS simply reflect social desirability bias.

Task 3: Goal-setting task. Subjects listed all of the goals they had for the next day, in any order.

Task 4: Goal prioritization task. Subjects assigned a priority value (rated from 1, *critically important*, to 7, *relatively unimportant*) to each goal.

Task 5: Accomplishment scheduling. Two days after subjects completed the previous tasks, they filled in a blank schedule, broken into 10-min blocks, with everything they did on the previous day. Subjects were not allowed to see their responses on previous tasks.

Task 6: Follow-up questionnaire. Subjects rated, on a scale of 1 (*poor*) to 7 (*excellent*), how good planners they considered themselves to be.

Procedure. To control for the effect of task order on performance, the position of the essay task and the GSPS were counterbalanced with respect to the other tasks. The subjects completed all of the tasks over two sessions, 2 days apart, and the interceding day was always a week-day. All testing was conducted in a quiet college classroom on evenings during a 2-week period in the middle of the fall trimester. The subjects were tested in groups of 10 or fewer at a time, but each subject worked at her or his own pace.

Results and Discussion

Coding. Coding of the accomplishment-scheduling task began from the time at which the subject recorded waking up (or 4:00 a.m., whichever came later) until the end of the coding sheet (12:00 midnight). If a goal was not mentioned in the accomplishment-scheduling task, the amount of time spent was assigned a value of 0 min. If any time was spent on a goal, the goal was considered to be completed for later analyses.

Some distortions became evident as we coded the data: Several subjects worked past midnight, and some goals may have been only partially completed. Another complication arose when the goals listed in the goal-setting task (e.g., "do French homework" and "do Math homework") were more specific than the descriptions on the accomplishment-scheduling task (e.g., "studying"). In these cases, the specific responses on the goal-setting task were aggregated into a single goal, and the average priority was used in subsequent analyses.

To code the essay task, the authors each read half of the essays (typewritten onto separate pages), and these initial readings led to a list of 13 distinct themes. Both

of the authors and an undergraduate unfamiliar with the hypotheses of the study coded all of the essays. Intercoder reliabilities for each item as well as the mean intercoder reliability across themes are provided in Table 1.

Analyses. As expected, the GSPS was found to have an acceptably high internal reliability ($\alpha = .88$) and was not significantly correlated with the modified Marlowe-Crowne Social Desirability Scale ($r = .08, p > .10$). GSPS scores were also correlated with subjects' self-reported ratings of their own planning abilities ($r = .68, p < .001$). These results indicate acceptable internal reliability and some concurrent validity for the GSPS.

A 2 (year) \times 2 (gender) \times 4 (order of tasks) between-subjects analysis of variance (ANOVA) was run on GSPS scores. The analysis revealed a main effect for year [$F(1,83) = 7.75, MS_e = 173.21, p < .01$], with seniors ($M = 107.50$) having scores higher than those of 1st-year students ($M = 100.13$), perhaps due to greater expertise in planning daily schedules in college. There was also an unexpected gender difference in planning scores [$F(1,83) = 5.23, MS_e = 173.21, p < .05$], with women's ($M = 106.83$) scores being higher than men's ($M = 100.44$). No other main effects or interactions were statistically significant.

Next, subjects' GSPS scores were correlated with the themes expressed in their essays. The analysis revealed two relationships that were significant and one relationship that was marginally significant. Students with higher GSPS scores were less likely to describe planning in terms of "reducing stress" ($r = -.24, p < .05$), "making predetermined decisions" ($r = -.22, p < .05$), or "anticipating the future" ($r = -.20, p < .10$).

The pattern of gender differences indicated that men and women think about planning in slightly different terms: men's GSPS scores were highly correlated with the theme "achieving satisfaction" ($r = .55, p < .001$), whereas women's GSPS scores were moderately negatively correlated with this theme ($r = -.34, p < .10$). Men with higher GSPS scores were more likely to

Table 1
Themes Listed in Definitions of Planning
and Intercoder Reliabilities

Theme	Reliability α
A. Anticipating future	.84
B. Budgeting resources	.81
C. Scheduling/managing time	.74
D. Setting goals	.59
E. Prioritizing goals	.93
F. Organizing	.91
G. Achieving efficiency	.87
H. Remaining flexible	.75
I. Reducing stress	.79
J. Achieving satisfaction	.83
K. Reminding self of goals or tasks	.88
L. Making predetermined decisions/making deliberate, conscious choices	.51
M. Automatically responding or following routine	.97

Note—Mean intercoder reliability = 0.80. Full descriptions of each theme are available from the first author.

describe planning as a mnemonic strategy, (Theme K; $r = .35, p < .05$), and less likely to conceive of planning in terms of "making predetermined decisions" ($r = -.38, p < .05$). Women did not show this pattern; instead they showed marginal and negative correlations between GSPS scores and the themes "setting goals" ($r = -.26, p < .10$) and "reducing stress" ($r = -.25, p < .10$) and marginally positive correlations with "organizing" ($r = .26, p < .10$).

The correlational patterns of 1st-year students and seniors also showed differences. Seniors' GSPS scores were for the most part uncorrelated with any themes. However, 1st-year students' GSPS scores were significantly positively correlated with "organizing" ($r = .33, p < .05$) and significantly negatively correlated with "reducing stress" ($r = -.42, p < .01$) and "making predetermined decisions" ($r = -.54, p < .001$).

For the remaining analyses, the subjects whose GSPS scores were in the top third of scores were designated good planners; those in the middle third, average planners; and those in the bottom third, poor planners. We call this recoded variable the *planning level*. As a preliminary analysis, we compared the number of goals listed across different subject groups. On the average, subjects listed 10.09 goals ($SD = 4.47$). A 3 (planning level) \times 2 (year) \times 2 (gender) between-subjects ANOVA on the number of goals listed revealed no significant main effects or interactions.

To assess differences in the proportion of goals that different groups of subjects completed, a 3 (planning level) \times 2 (year) \times 2 (gender) between-subjects ANOVA was performed on the proportion of goals listed in the goal-setting task that subjects actually accomplished. None of the main effects or interactions were significant. Next, we examined how the completion of goals was affected by goal priority, to determine whether or not good planners sacrificed the completion of less important goals in order to complete those higher priority goals. Goals were separated into the categories of high priority (assigned a priority of 1 or 2 in the goal prioritization task), medium priority (assigned a priority of 3, 4, or 5), and low priority (assigned a priority of 6 or 7).

The proportion of goals that subjects listed that were actually completed was subjected to a 3 (goal priority) \times 3 (planning level) \times 2 (year) \times 2 (gender) mixed ANOVA with repeated measures on the first factor. The main effect for goal priority was significant [$F(2,58) = 3.64, MS_e = 0.06, p = .032$]. Tukey's(a) pairwise specific comparisons demonstrated that high-priority goals ($M = 0.82$) were completed more frequently than were medium-priority goals ($M = 0.63$), which in turn were completed more frequently than were low-priority goals ($M = 0.45$; all $ps < .01$).

The analysis also revealed a significant interaction between planning level and goal priority [$F(4,58) = 2.75, MS_e = 0.06, p = .037$; all specific comparisons were Tukey's tests at $p < .05$]. The pattern of means demon-

strated that poor planners separated high-priority goals ($M = 0.82$) from medium- ($M = 0.50$) and low-priority ($M = 0.40$) goals, whereas good planners were less likely to distinguish between high- ($M = 0.72$) and medium-priority ($M = 0.71$) goals. Instead, they separated both of these from low-priority goals ($M = 0.41$). (Although the difference between high- and low-priority goals was significant, medium-priority goals did not differ significantly from either high- or low-priority goals.) Average planners showed a pattern in between the patterns of good and poor planners, although their means for high-, medium-, and low-priority goals ($M = .92, .70, \text{ and } .59$, respectively) showed no significant differences.

STUDY 2

Surprisingly, undergraduates who differed on the GSPS did not differ on behavioral measures of planning. Good planners did not reliably complete a higher proportion of their goals than average or poor planners did, nor were they more sensitive to goal priority. These findings might imply that good, average, and poor planners do not differ in the proportion of goals they complete, at least over the span of 1 day. Or, the lack of differences may be due to an artifact of the measure used: Scheduling of time spent was restricted by an experimenter-imposed limit; goals completed after midnight were not listed. In addition, spending time on a particular goal does not necessarily mean that the goal was completed, although we were effectively forced to code it as such. To address these possibilities, a follow-up study was designed to try to replicate these findings by using a more precise operationalization of goal completion.

Method

Forty-eight undergraduate students were recruited from an introductory psychology class (13 male, 26 female); none had participated in the first study. They were tested simultaneously in a large classroom, but each worked at her or his own pace. Nine subjects failed to complete both parts of the study and were dropped. The subjects first completed the GSPS as well as the modified version of the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1964; Greenwald & Satow, 1970), and then they completed the goal-setting and goal prioritization tasks used in the first study. Two days later, the subjects were provided with a typed list of the goals they had listed, and they placed a check by each goal that they had completed.

Results and Discussion

The results of the follow-up study replicated the earlier findings. A 3 (goal priority) \times 3 (planning level) mixed ANOVA with repeated measures on the first factor on the proportion of goals completed revealed a significant main effect for goal priority [$F(2,44) = 6.69, MS_e = 0.13, p < .005$]. Subjects completed a significantly greater proportion of high-priority goals ($M = 0.91$) than of low-priority goals ($M = 0.51$), but the proportion of medium-priority goals ($M = 0.74$) completed did not differ significantly from that of high- or low-priority goals (Tukey's[a] test, $p < .05$). No other effects were significant. Because this finding replicates the central find-

ing of the first study, it suggests that the first study's results cannot be attributed to the operationalization of goal completion.

GENERAL DISCUSSION

One possible explanation for the lack of behavioral differences between good and poor planners is the short duration of the time scheduled. Perhaps if subjects were allowed to schedule an entire week rather than a single day, the differences between good and poor planners would be accentuated. Another possibility is that our sample of subjects might all be above-average planners, thus restricting the range of measures such as goals completed. In addition, goal completion may vary as a function of the type of goal rather than simply by priority. For example, some goals may have to be completed at a specific time, whereas others may be completed at any time. Perhaps behavioral differences will emerge when different types of goals are compared.

Although analyses of goal completion revealed few behavioral differences, individual differences were apparent in conceptions of "planning": Certain themes in subjects' essay definitions of planning were significantly correlated with GSPS scores. The presence of the themes "making predetermined, deliberate decisions" and "reducing stress" (e.g., avoiding feeling rushed) in the definition of planning were negatively related to GSPS scores. These findings imply that better planners tend to define planning in terms of achieving satisfaction, organizing activities, or breaking down goals into more manageable subgoals, and that they are less likely to think of planning as constraining activities to a set of predetermined decisions.

The study also uncovered both gender and year-in-school differences in the ways in which planning is defined and conceptualized. Men conceive of planning in terms of a mnemonic strategy, women, in terms of organization. This suggests that women may think of planning in slightly broader terms, a speculation that must be investigated further. Also worthy of further study are differences in essay themes as a function of year in school. Our work suggests that conceptions of planning change with time or practice, and future work must document how and when these changes occur, and if and when they affect, or are affected by, actual planning behavior.

REFERENCES

- CROWNE, D. P., & MARLOWE, D. (1964). *The approval motive*. New York: Wiley.
- DREHER, M., & OERTER, R. (1987). Action planning competencies during adolescence and early adulthood. In S. L. Friedman, E. K. Scholnick, & R. R. Cocking (Eds.), *Blueprints for thinking: The role of planning in cognitive development* (pp. 321-355). New York: Cambridge University Press.
- GALOTTI, K. M. (1989a). Gender differences in self-reported moral reasoning: A review and new evidence. *Journal of Youth & Adolescence*, **18**, 475-488.
- GALOTTI, K. M. (1989b). Unpublished survey and data.
- GALOTTI, K. M., & KOZBERG, S. F. (1987). Older adolescents' thinking about academic/vocational and interpersonal commitments. *Journal of Youth & Adolescence*, **16**, 313-330.
- GREENWALD, H. J., & SATOW, Y. (1970). A short social desirability scale. *Psychological Reports*, **27**, 131-135.
- HAYES-ROTH, B., & HAYES-ROTH, F. (1979). A cognitive model of planning. *Cognitive Science*, **3**, 275-310.
- KLAHR, D., & ROBINSON, M. (1981). Formal assessment of problem-solving and planning processes in preschool children. *Cognitive Psychology*, **13**, 113-148.
- MILLER, G. A., GALANTER, E., & PRIBRAM, K. H. (1960). *Plans and the structure of behavior*. New York: Henry Holt.
- PEA, R. D., & HAWKINS, J. (1987). Planning in a chore-scheduling task. In S. L. Friedman, E. K. Scholnick, & R. R. Cocking (Eds.), *Blueprints for thinking: The role of planning in cognitive development* (pp. 273-302). New York: Cambridge University Press.
- PUFFER, S. M. (1989). Task-completion schedules: Determinants and consequences for performance. *Human Relations*, **42**, 937-955.
- RADZISZEWSKA, B., & ROGOFF, B. (1991). Children's guided participation in planning imaginary errands with skilled adult or peer partners. *Developmental Psychology*, **27**, 381-389.
- ROGOFF, B., GAUVAIN, M., & GARDNER, W. (1987). The development of children's skills in adjusting plans to circumstances. In S. L. Friedman, E. K. Scholnick, & R. R. Cocking (Eds.), *Blueprints for thinking: The role of planning in cognitive development* (pp. 303-320). New York: Cambridge University Press.