DEPARTMENT OF COGNITIVE SCIENCES
SELF-STUDY REPORT

SECTION 1: ANALYSIS OF PAST REVIEWS (copies available upon request)

1. *Briefly characterize the last review of the Department's undergraduate program(s), conducted in 2002-03.*
   a. *What were the key strengths and weaknesses of the program cited by the external review committee?*

The key strengths and weaknesses cited were as follows:
- The department provided instruction for a large number of undergraduate psychology majors despite a wide variety in student interests and abilities; some faculty members achieved impressively high student evaluations in intellectually challenging courses.
- The major to faculty ratio, at the time 45 to 1, taken together with the large number of lecturer-taught courses, was viewed as leading to instruction that caters to the lowest common denominator.
- The large number of transfer students received by the major, typically entering as juniors, was cited as leading to lack of rigor in upper-level course instruction.
- The high student to teaching assistant ratio was cited not only as an instructional weakness but also as a burden on students in the graduate program.

   b. *Describe the specific steps that have been taken to respond to the recommendations from the last review.*

The last review's recommendations and specific steps (S) taken in response are as follows.
- Merge or at least closely coordinate the two undergraduate psychology majors. (S) Coordination between the two majors has increased substantially, including notably the extensive cross-listing of courses in the two majors and the adoption of a common year-long introductory psychology course for students in both majors. More extensive plans for a major merger failed to find traction.
- Increase the number of department faculty to achieve an undergraduate major to faculty ratio of no more than 30 to 1. (S) At the time of the earlier review, there were 847 majors and 20 faculty: a ratio of 42 to 1. The current number of Psychology majors hovers around 1100, while the number of active line faculty is 23: a ratio of 48 to 1. Nine faculty have been hired into the department since the last review (Brewer, Grossman, Krichmar, Lee, Pearl, Richards, Sarnecka, Serences, Sprouse). Yet some members retired or left (Braunstein, Brown, Cicerone, Falmagne, Kean, Serences). The number of majors increased. Many desirable improvements to Psychology instruction are effectively prohibited by the extraordinarily high student to faculty ratio.
- Decrease the number of courses taught by lecturers. (S) With one exception, all pre-six lecturers were not hired back in AY 2009/10 because of the budget crisis. Furthermore, the six lecturers with seniority of employment who teach Psychology courses received termination notices mid-2009 as part of a campus-wide response to the budget crisis. Their twelve-month notification period means that their lecturing in academic year 2010-11 is uncertain at best; the Department has been instructed to plan for a 50% cut in the lecturer budget for 2010/11.
- Structure better the selection of psychology major courses and consolidate redundant ones. (S) The current budget crisis has prioritized the goal of making certain that courses required for graduation are available to students; we are optimistic that the current structure will suffice. Restructuring and redundancy elimination depend somewhat on coordination with the Department of Psychology and

Social Behavior; courses are offered by both departments concerning development as well as areas like abnormal psychology, personality theory, motivation, *etc*.

- Establish well-defined tracks of study in the major. (S) The department is preparing a proposal for a new major that would provide a B.S. degree in Cognitive Science. This major would target the most able students and provide them a more challenging curriculum. The curriculum includes concentrations in cognitive neuroscience, experimental psychology (sensation, perception, attention & memory), language science, and a customized program of study. Note that the name of the major has not yet been settled; the name Cognitive Science is a strong candidate and is used throughout this document to promote readability.
- Provide rigorous training in all areas of Psychological Science. (S) Rigorous training is a long-term goal of the department's draft proposal for a B.S. in Cognitive Science. Its provision in *all* areas would require a significant increase in the number of department faculty members.
- Increase writing and laboratory activities. (S) Instructional resources have not been available. However, the Cognitive Sciences major-in-planning would entail increases in both categories for a relatively small set of students.
- Increase the size of the psychology honors program. (S) Instructional resources have not been available. One hopes that a significant fraction of these students will find their way into a Cognitive Sciences major.
- Increase the availability of undergraduate counseling concerning psychology. Undergraduate Director Dr. Christine Lofgren continues to provide certain counseling activities; further counseling resources are administered by the School through the Social Sciences Counseling Office, directed by Helen Morgan.

2. *Briefly characterize the last review of the Department's graduate program(s), conducted in 2002-03.*
   a. *What were the key strengths and weaknesses of the program cited by the external review committee?*

The key strengths and weaknesses cited were as follows:
- The Psychology doctoral program does not attract the very best graduate students, who typically enroll elsewhere in more prestigious programs with broader opportunities for training and/or better financial support.
- Funding packages offered to entering graduate students are substandard.
- Graduate student funding in the Department depends far too much on teaching assistantships.
- First-year course requirements and teaching assistant workloads impede students' research progress during the initial two years.
- Insufficient coverage of essential topics in cognitive psychology.
- No comprehensive preliminary doctoral candidacy examination.
- No requirements for completing cognate courses in allied disciplines.
- The program produces students with a narrow scope of interest and expertise.
- Graduate students do not receive sufficient training in crucial professional skills (*e.g.*, job talks, grant proposals).

   b. *Describe the specific steps that have been taken to respond to the recommendations from the last review.*

The last review's recommendations and specific steps (S) taken in response are as follows.

- The university should fund more comprehensive fellowship packages for grad students and provide tuition and fee waivers to research assistants supported by federally-funded research grants. (S) The stipend for graduate teaching assistants continues at about $18K over the academic year. Surprisingly, the various pay scales made available for graduate research assistantships place their stipends lower than the teaching assistant value and, for students early in their graduate studies, significantly lower than this value. In a new development, the School has made available this past year some funds to cover fees for research assistantships.
- Graduate training in cognitive neuroscience should receive high priority; graduate training grants should be obtained. (S) The Psychology doctoral program now offers a Concentration in Cognitive Neuroscience. This is viewed as an interim step toward a full and independent Cognitive Neuroscience doctoral program. No graduate training grants in cognitive neuroscience (or any other area) have been obtained.
- Graduate students should receive more training in a broader range of topics. (S) The Psychology doctoral program curriculum was changed in 2007 to replace a requirement for taking a limited set of first-year breadth courses with a requirement to sample a broader set of core electives (Psych 210 - 219).
- Program requirements should include a comprehensive doctoral candidacy examination. (S) Many faculty agree with this; some do not. The concentration in Cognitive Neuroscience includes a qualifying exam which is administered in the fall of the second year.
- Students should receive more practice presenting formal talks and have more space for interacting informally. (S) Wright offered for several years a new course, Professional/Lab Skills (Psych 204), to address the need for greater professional socialization. Students who are not in the cognitive neuroscience concentration continue to have a second-year talk requirement. This talk and those at professional conferences continue to be polished in a non-systematic fashion by advisors and lab-mates. A small graduate lounge existed in SSL briefly (2006-08) but was turned into much needed lab space. Perhaps the new space available in the SBSG building will make such space a possibility in the future.

SECTION 2: ANALYSIS OF CURRENT PROGRAMS

1. *Overview of Department*
   a. *Provide a brief history of the Department and a description of its organization (e.g., degree programs, disciplinary specialties, etc.). Include a description of any formal interactions with other Departments and/or other units on campus.*

The Department of Cognitive Sciences was formed in 1986 from members of the previously non-departmentalized School of Social Sciences. It offers B.A., M.A., and Ph.D. degrees in Psychology.

Jack Yellott was the first chair and presided over many important developments. Early expertise in mathematical psychology and in vision research were used to build these areas substantially in the late 1980s through mid 1990s; Mary Louise Kean served as chair during part of this period. While stars like Duncan Luce, Jean-Claude Falmagne and George Sperling hired at this time added tremendous luster to the Department, the overall effect of the concentration of hiring in these two areas was to create a Department with tremendous depth in a rather limited number of domains. Second, a number of Department members in the field of linguistics left to form their own department around 1990. While reducing intra-Department tensions substantially, this move weakened Department expertise in that field, a problem that has only recently been addressed through the hires of Pearl and Sprouse. Third, the budget crisis in the early 1990s led to the decision to "cap" the size of the Psychology major in an attempt to

match resources to responsibilities. The major was uncapped after several years and has grown slowly but steadily to its current size: 1100. The regrowth is a positive development, insofar as funding of the School of Social Sciences, from which is derived Department support, depends strongly on student head count.

Barbara Dosher steered the Department towards cognitive neuroscience during her tenure in the late 1990s as chair and, now, as Dean of the School of Social Sciences. Recognizing the Department's weakness in an area undergoing explosive growth, she initiated hiring in cognitive neuroscience which continued until 2008. As Dean she also recognized in 2006 the School's Center for Cognitive Neuroscience, directed by Greg Hickok, which draws on a number of Departmental faculty as members.

Ted Wright, who served as chair during the early 2000s, contributed tremendously to the rapprochement between this Department and the Department for Psychology and Social Behavior. He was the motive force behind the extensive cross-listing of the departments' courses and for their joint year-long introduction to psychology. He continues to be active in undergraduate matters and chairs the Undergraduate Curriculum Committee.

The Dean and current chair strive especially to enhance the research productivity and stature of middle-aged and younger faculty in the Department.

There are two other departments at UC Irvine which offer curricula related to psychology and behavior. The first is the Department of Psychology and Social Behavior, which is part of the School of Social Ecology. Their eponymous major has many majors as Psychology; the two majors combined account for 10% of UC Irvine's undergraduate population. Cooperation between the two Departments increased dramatically during Ted Wright's period as chair and resulted in extensive course cross-listing and a joint year-long introduction to psychology. The second is the Department of Neurobiology and Behavior, part of the School of Biological Sciences. It is often noted for its pursuit of molecular-level approaches to the study of memory and learning. The School of Biological Sciences administers a single large major; BioSci students in their later years may specialize in one of several boutique majors, including Neurobiology.

Research centers with which Department faculty members maintain affiliation include notably the Institute for Mathematical Behavioral Sciences, the Center for Hearing Research, the Center for the Neurobiology of Learning and Memory, the Center for Machine Learning and Intelligent Systems, and the Center for Cognitive Neuroscience. Department faculty courtesy appointments are found in the Departments of Psychology and Social Behavior, Biomedical Engineering, Information and Computer Science, Philosophy, and Neurobiology and Behavior.

b. *Provide a list of all current full-time faculty organized alphabetically within rank (include graduate degree institution and a brief set of research interests) (**Table 1**).*

c. *Discuss the distribution of the faculty in terms of rank, gender, and ethnicity (Table 2). Provide information about faculty recruitment and retention, including efforts to diversify the faculty, since the Department's last review. Referring to data from the Office of Equal Opportunity and Diversity (Table 3), evaluate the Department's success in achieving diversity in terms of national availability. Does the Department have a plan, and is the plan being effectively implemented?*

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The distribution of line faculty members among the various ranks is as follows: six full professors at step VI or above, eight full professors below step VI, four associate professors and five assistant professors. Hiring more junior faculty is the best way to reduce this somewhat top-heavy distribution.

Seven of 23 active line faculty members are female at this time; four of 19 faculty were female at the time of the previous review. The Department made a strong effort to maintain gender parity in hiring during the review period and succeeded. Of the nine faculty hired since the last review, five are female. The seven female faculty members of the Department include three full professors, of whom one was hired during the review period, and four assistant professors, of whom all four were hired during the review period. Note that with this method for reaching gender parity, the overall gender distribution in the Department will take years to reach parity, especially with a hiring freeze in place. Note also that hiring into the typically more numerous assistant professor positions places females disproportionately in junior ranks. All but one of the faculty members are Caucasian. On this campus, the absence of professors of East Asian ethnicity is an especially glaring omission.

> d. *How many part-time and/or visiting instructors are in the Department and how are they deployed in the instructional program? How many individuals are in the research specialist and professional researcher series and how are they deployed in the program?*

At the time of the previous review there were 39 lecturer-taught courses. There are now 21 lecturer-taught undergraduate courses. These are taught by six lecturers with seniority of employment (Byde, Canul, Howard, Lewis, Lofgren and Vaughn) and one without (Hagedorn). Lecturers teach almost exclusively undergraduate breadth courses for non-majors (*e.g.*, the quarter-long Psych 7a, Intro Psych) and undergraduate courses in areas of psychology disjoint from cognitive science (*e.g.*, testing, personality, abnormal, motivation, I/O psych, sports psych). The two exceptions are Hagedorn, who is teaching Psych 9A twice this year to cover for a line faculty sabbatical (Hoffman) and the departure of a former instructor (Serences), and Lofgren, who teaches Human Memory and Psych Research Methods (which helps students fulfill their research class requirement).

At the time of writing, researchers are three in number (Gage, Lefebvre, Shankle). There is one project scientist (Steingrimsson). Research specialists are six in number (Bamber, Drew, Hagedorn, Jeter, Fillmore, Garcia). There are five postdoctoral scholars (Almeida, Chu, Hetley, Richert, Rong); three further postdoctoral scholars are expected to arrive in winter 2010. Associate Development Engineer Cox rounds out this group. The specialists, postdocs, project scientist and development engineer draw their salaries from external grants on which a faculty member is PI. The researchers make their own way.

> e. *Describe your system of Departmental governance, in particular the procedures for and effectiveness of faculty involvement in curricular development, instructional resource allocation, and service activities to the School and campus.*

Department faculty members conduct major business (personnel case decisions, hiring decisions, major curriculum revisions, *etc*.) during faculty meetings. Matters may be put to either an informal vote (show of hands, secret ballot) or a formal one administered through the Web by the Dean's office. Faculty meetings are typically preceded by informal discussion of current issues and, in certain matters, committee meetings. Committees include Departmental Personnel Committees, Hiring Committees, and Undergraduate and Graduate Curriculum Committees. Personnel committees are formed to shepherd faculty members' personnel cases through the personnel review process. Hiring committees are formed to help guide the Department towards excellent hiring decisions and to take visiting job candidates out to

dinner, *etc*. There is no student participation in faculty meetings, personnel committees or hiring committees. Both the Undergraduate and the Graduate Curriculum Committees have several graduate student members.

Instructional resource allocation is a wide and varied topic. For example, faculty are themselves instructional resources who are allocated when a teaching plan is created through a cooperative process for the coming academic year. The final say on teaching assistant resources resides with the Dean's office. That said, both faculty and students can provide input on whom they are willing to work with in an instructor / teaching-assistant relationship. Instructional resources also include classrooms; the Department Office does its very best to ensure appropriate classrooms at desired times.

The Department plays a limited role in arranging for School and Campus service activities.

> *f. Describe the Department policy on teaching workload for formal graduate and undergraduate courses including information about course release policies for research and administrative service, and any changes in policy since the last review.*

The teaching workload is four courses distributed over the three quarters of the academic year. Undergraduate and graduate independent study, important components of instruction, do not count towards this total. Each faculty member teaches a service course. Examples include a lower-division lecture course with a high enrollment, a writing course, a laboratory course offering 6 or more credit hours, *etc*. Team-teaching such a course does not count. Each faculty member is also expected to offer a second (typically upper-division) undergraduate course and two graduate-level courses. A course release may be applied to the second undergraduate course but not the service course. The Dean receives complete release from teaching courses. The Department chair is released from teaching two courses. The Director of a research center (like the Center for Cognitive Neuroscience) is released from teaching a single course, as is the Graduate Program Director. The Dean has instituted a new policy which allows for teaching buyout. The policy lets an externally-funded faculty member who contributes to graduate research assistant support to buy out of a single course every other year. The Department favors an expansion of this privilege and a formal reduction in teaching workload to match better the lighter loads borne by faculty in directly competing programs (*e.g.*, at UCSD).

> *g. What are the strengths of the Department's research program, and how does the overall research program compare with top national research programs in the discipline/field?*

While the Department continues strong in mathematical psychology, leading lights in this area have either retired or are near retirement. Mathematical behavioral science, construed more broadly, continues very strong in the Department and is nurtured by the Institute for Mathematical Behavioral Sciences, of which 12 active line faculty in the Department are members. The Department's longstanding strength in vision research ebbed temporarily through the retirement of Braunstein and Yellott and through Cicerone's departure. Yet remaining faculty with vision expertise have been joined by new hires Brewer, Grossman and Krichmar. The recent hire of Richards has brought to three the number of auditory psychophysicists in the Department (Berg, Richards, Saberi). They and other Department faculty make a significant contribution to the Campus' tremendous strength in hearing research, unified by the Center for Hearing Research. Cognitive neuroscience is significantly stronger now than at the time of the previous review. Faculty working in this area include Brewer, Dosher, D'Zmura, Grossman, Hickok, Krichmar, Saberi and Srinivasan. External research funding is high in this group; its members are unified through the activities of the Center for Cognitive Neuroscience. Research on cognition and information processing has also

grown through hiring of the computationally-oriented Lee and Steyvers; this group continues to count among its members UCI Distinguished Professor Sperling. Finally, language science has expanded through the hiring of Pearl and Sprouse, through the hire of cognitive developmentalist Sarnecka, and through continued efforts of existing faculty like Hickok, Mann and Saberi. Language science subareas include language acquisition and development, psycholinguistics, computational linguistics and neuro-linguistics. 20 of 23 active line faculty members conduct laboratory-based scientific research; 17 of the 23 are PIs on external grants.

While the Department has expertise in fields traditionally allied to cognitive science like computer science, philosophy and linguistics, ties to allied units on Campus could be strengthened (with the notable exception of linguistics, for which there is no allied unit). Research in a number of Cognitive Science disciplines is thin (*e.g.*, computational neuroscience, higher-level cognitive processing, human-computer interaction/robotics, language and development) or non-existent (*e.g.*, human behavioral genetics, social cognitive neuroscience). The number of active line faculty in the Department of Cognitive Sciences is simply too small for the Department to match top national research programs. The continuing lack of a research and training grant related to a Departmental strength disappoints.

> *h. Describe the working relationship between the Department and the Dean's office.*

A wide variety of matters of interest to the Department are handled very well through the cooperative efforts of Department Manager Clara Schultheiss and Assistant Dean Dave Leinen. Reporting to Dave are Dave Petrutis and his staff (facilities) and Jerry Keys and his staff (computing), and their hard work on behalf of the Department and School is gratefully acknowledged. Department personnel matters are handled superbly through the cooperative efforts of Clara Schultheiss and Dean's Office Personnel Managers Cindy Sasso and Joy Heimos. Grant award post-processing is handled by the Accounting arm of the Dean's office, and many thanks are due to Char O'Hehir, Shelly Bennett-Burns, Karen Reiser, Mandy Tompkins, Jin Chae and Trisha Fisher, who coordinate with Department Administrative Assistant Jessica Cañas. Control over graduate teaching assistant and research assistant hiring flows through the office of the Associate Dean for Research and Graduate Studies, Linda Cohen. Her cooperation with Department Graduate Program Director Geoff Iverson and the work of her staff members, particularly John Sommerhauser and Pat Frazier, make it all happen. The Department acknowledges also the superb work of Associate Dean of Undergraduate Studies Caesar Sereseres and his staff, and of Helen Morgan and her staff in the School's Counseling Center, who work in cooperation with the Department Office and with Christine Lofgren, the Department's Undergraduate Program Director.

> *i. Comment on the adequacy of the Department's operating budget, staff support, and space/facilities/equipment (Table 2).*

The Department's operating budget has been slashed repeatedly, due to the budget crisis, and is expected to undergo a further 50% reduction this coming 2010/11 year. The operating budget is inadequate for the tasks to be performed.

Department staff members are two: Department Manager Clara Schultheiss and Administrative Assistant Jessica Cañas. They are truly the jewels of the Department. They are also overworked; managing the Department of Cognitive Sciences and the Psychology major generates a workload for at least four staff members, a figure that takes into account the centralization of staff resources in the School. Yet there is a staff hiring freeze.

The majority of Department members moved their offices into the new Social Behavioral Sciences Gateway building (SBSG) this past September. The move went very smoothly, thanks to hard work by staff members. Those who moved are happy with their new offices; the new building is a cut above the older Social Science Plaza buildings. At the time of writing, a substantial fraction of the space in SBSG goes unused due to lack of funds for purchasing furniture. Emeritus faculty and other Department members like researchers, specialists and postdocs will presumably move to SBSG once furniture becomes available. One active line faculty member, Jeff Krichmar, has been assigned lab space in SBSG, while a further member, Kourosh Saberi, will purchase a sound chamber and install it in a purpose-built room in SBSG and perform auditory experiments there. Further faculty members may be assigned lab space in SBSG once fiscal impediments are surmounted. Current lab space for most Department members is found in the Social Sciences Lab building. The Department's 2006 Strategic Plan likens departmental lab space in the Social Sciences Lab building to food in the Army: bad and not enough.

Department equipment includes computers and printers, one each per staff member. It includes also items in the "break room": a copy machine, a refrigerator, a microwave, and a water cooler. The Department has a laptop, several computer projectors and several overhead projectors on loan to faculty and students for teaching and presentations. The Department also provides telephones and internet connections for staff and faculty member offices.

*j.   Provide narrative explanation and a brief table of general budget categories and expenditures (no more than a single page) (**Table 4**)*

By far the largest part of the budget goes to the "temp faculty" subcategory in Personnel Expenses: Lecturers. Expenditures in this subcategory were $238K in 2008/09. Allocated for this academic year 2009/10 was $175K. We have been told to prepare a budget with that figure halved for academic year 2010/11. The total allocated budget for the Department includes not only Personnel but also Operating Expenses. Their sum this year is $251K; both components will be halved for next year. The budget for Operating Expenses includes inadequate funds for graduate recruitment, for events like faculty meetings, colloquia, and welcome receptions, for miscellaneous graduate student support (*e.g.*, helping to reimburse travel expenses when presenting a poster or paper at a professional conference), for educational equipment ("special one-time"), and for operations (copying, phones, *etc.*).

*k.   Comment on Development activities at the Department level and provide data on amount and sources of gift funding for the past 5 years (**Table 5**).*

Minako Tarow, wife of deceased Emeritus Professor of Cognitive Sciences Tarow Indow, has made an extraordinarily generous gift to establish the Minako and Tarow Indow Distinguished Fellowship in Cognitive Sciences, for which we are very grateful. We thank School Development Officer Carol Spencer for her efforts with this gift and with others. Also mentioned in Table 5 are the Jumpstart funds in 2007-09, which support Professor Virginia Mann's reading outreach program; the gift from Proctor & Gamble supported research by Professor Don Hoffman. Unmentioned in the Table are funds from an educational software company, Aleks, Inc., which was founded by Department of Cognitive Sciences Emeritus Professor Jean-Claude Falmagne. Falmagne's company contributes a portion of its revenues directly to the Department. These funds are gratefully acknowledged. While modest in size, they have become a significant fraction of the Department's Operating Expenses budget and, next year, are likely to be a substantial fraction.

2. ***Evidence of Faculty Distinction***
   a. *Discuss evidence for faculty/departmental distinction in research, teaching, and service (e.g., faculty research productivity in publications and extramural grant support, scholarly awards and honors, teaching awards, and distinguished service to the school, campus, university, and/or scholarly field).*

Publications by active line faculty members during the period under review include three single-authored books by Narens, a co-authored book by Hoffman, and a second edition co-authored by Srinivasan. The total number of publications, including primarily peer-reviewed journal articles and an increasing number of peer-reviewed conference proceeding articles, was 522 (*vs*. 300 in 2002/03).

17 of 23 active line faculty are PIs on contracts and grants from agencies including NIH, NSF, AFOSR, ONR, ARO and DARPA. At the time of writing, total direct costs expended per annum per active line faculty member stands at about $150K, which places Department of Cognitive Sciences external grant funding substantially above that for the School of Social Sciences as a whole ($24K per FTE, including Cognitive Sciences, in 2008-09) and comfortably above levels in the Schools of Social Ecology ($57K) and of Information & Computer Science ($123K). The Department figure $150K is below the $200K+ levels found in the Schools of Physical Sciences ($213K), Engineering ($225K) and Biological Sciences ($283K). At the time of the previous review, the Cognitive Sciences figure stood at $63K; of the 20 faculty at that time, 9 were PIs.

Awards during the review period include three to Steyvers: the American Psychological Association New Investigator Award, the Society for Experimental Psychologists Early Investigator Award, and the Cognitive Sciences Society Best Paper Award shared with graduate student Pernille Hemmer. Awards include also two to Sperling: the Optical Society of America Edgar D. Tillyer Award and the International Neural Network Society Helmholtz Award. They include Lee's Society for Mathematical Psychology New Investigator Award. Best paper awards include three from the *Journal of Mathematical Psychology* (to Luce & Steingrimsson, to Narens and to Iverson). The International Reading Association chose Mann for their Celebrate Literacy Award.

Evidence of teaching excellence includes Hoffman's receipt of the UCI Chancellor's Award for Excellence in Undergraduate Research. Steyvers received the Faculty Mentor of the Month Award from UROP. Grossman received the Assistant Professor Mentoring Award from the Associated Graduate Students, as well as a Faculty Career Development Award.

Professional service during the period under review is high. Lee serves as President of the Society for Mathematical Psychology, Krichmar is Chairman of the Decade of the Mind Initiative Steering Committee, Richards serves as Technical Chair for the Acoustical Society of America, Brewer is Co-Chair of the Optical Society of America Vision Section, and Dosher sits on the Vision Sciences Society Executive Board. Sperling is founder and continuing organizer of the Annual Interdisciplinary Conference; Sarnecka is co-founder and organizer of the SOCAL Development conference; Lee and Steyvers have both served as conference organizers for the Society for Mathematical Psychology; Steyvers has served as Area Chair for the Neural Information Processing Society, while Dosher and Chubb co-organized the Frontiers in Human Information Processing conference in honor of George Sperling.

Editorial work during the period under review includes Associate Editorships for Batchelder (*Journal of Experimental Psychology*), Chubb (*Attention, Perception & Psychophysics*), Dosher (*Psychological Review*), Lee (*Journal of Mathematical Psychology* and *Cognitive Science*) and Mann (*Annals of Dyslexia*), and Editorial Board memberships for D'Zmura (*Vision Research*), Iverson (*Journal of Mathematical Psychology*), Lee (*Psychonomic Bulletin & Review*, *Journal of Problem Solving*, *Psychological Review*), Mann (*Learning Disability Quarterly*), Sarnecka (*Journal of Genetic Psychology*), Steyvers (*Psychonomic Bulletin & Review*) and Wright (*Attention, Perception & Psychophysics*, *American Journal of Psychology*). Grant review activity includes membership on NIH study sections (Dosher, D'Zmura, Srinivasan), NSF study panels (Chubb, Grossman, Lee, Wright), and a host of other activities. Visiting positions include a Guest Professorship for Batchelder, who held the Revesz Chair in Psychology at the University of Amsterdam. They include also the Novartis Fellowship held by Srinivasan at the University of Lausanne.

Service to UC Irvine during the period under review is manifold. Batchelder served as director of the Institute for Mathematical Behavioral Sciences. Hickok is director of the Center for Cognitive Neuroscience; Grossman is its Associate Director. Campus committee memberships include those on CEP (Chubb, D'Zmura), CORCLR (Sperling, Srinivasan), CPB (Hoffman), CPT (Iverson) CUARS (Berg), IRB (Berg, Iverson), and the Senate Cabinet (Berg). Special committee and task force memberships include those on the RIC Imaging Steering Committee (Grossman), the UROP Faculty Advisory Committee (Hoffman), the NACS Faculty Advisory Committee (Wright), the IT Consolidation and Oversight Committee (Wright), the Imaging Task Force (Hickok), the Special Senate Committee on Diversity (Hoffman), the Responsible Conduct of Research Task Force (Srinivasan), the Research Conduct Policy Committee (Wright) and the IRB Task Force (Srinivasan). Chubb served as the ADVANCE gender equity advisor for the School of Social Sciences.

School of Social Sciences Executive Committee members have included Hoffman and Wright; Iverson now sits on this committee. Further service to the School was performed by Virginia Mann in the role Associate Dean for Graduate Studies and Research. Dean Barbara Dosher is far and away the Department's leader in service to School and Campus.

> b. *Provide biographical sketches (limit to 3 pages each) for all current full-time Departmental faculty (organized alphabetically).*

3. ***Evaluation of Undergraduate Program***

> a. *Admissions (refer to data in Table 6)*
>> i) *Describe efforts the Department makes to recruit and enroll high quality students in its undergraduate programs.*

Table 6 data, to have been provided by an extra-Departmental source, are not available at the time of writing. Recruiting is handled almost exclusively by UC Irvine's Admissions Office. This year, the number of transfer students admitted by this Office to the Psychology major far exceeded the number of freshmen admitted with a ratio of three transfers for every one freshman. The Department learned of this abrupt departure from the norm indirectly and after the fact. The average across UC Irvine for the past three years is two freshman for every one transfer.

In a joint effort with the Department of Psychology and Social Behavior, the Department makes available to the Admissions Office and to School Counseling a fact sheet concerning the desirability of majoring in

the topic psychology. The Department also makes regular pitches to UC Irvine's undecided/undeclared students, an opportunity provided by Rudi Berkelhamer, Associate Dean of the Division of Undergraduate Education. The Department also participates in presentations for potential incoming campus-wide honors students.

> ii) *Characterize the demographics of the Department's undergraduate students. Describe efforts the Department makes to recruit and serve members of underrepresented groups. Describe and comment on steps that the Department has taken to promote diversity. Is the Department's plan being effectively implemented?*

Females outnumber males two-to-one in the Psychology major. As for underrepresented groups, the Psychology major reflects a more general trend: the School of Social Sciences leads in the number of majors drawn from underrepresented groups. The Department is represented at spring welcoming/recruiting events for minority students and has organized lab tours for such groups; the Department values the promotion of diversity. That stated, Department activities have negligible impact on which students are admitted to the major.

> iii) *Comment on the number of Departmental majors and minors. Is it adequate, too few, or too many? Comment on the role of the department's minors.*

The number of majors hovers around 1100. The number of active line faculty is 23. The major-to-faculty ratio continues far too high. Students declare themselves Psychology minors at graduation; their number is not conveyed to the Department.

> iv) *Describe the criteria for admission into the Department major(s). Are there additional criteria for freshman adopting the Department major beyond the campus-wide criteria? What are the criteria for transfer students who wish to adopt the department major? What criteria or restrictions exist for UCI students in other majors who wish to transfer to the department major?*

Campus criteria for freshman admission are stated at: http://www.admissions.uci.edu/admissions_info/freshmen_admission/fr_adm.html. Campus transfer admission requirements are found at: http://www.admissions.uci.edu/admissions_info/transfer_admission/as_uc_elig.html. It is recommended that students who wish to transfer to the Psychology major at UC Irvine have a year-long introductory psychology course, one additional psychology course, and two additional courses in anthropology, economics, linguistics, political science or sociology under their belts. Required is a cumulative UC transferable GPA of 2.7 (about average; this value varies between 2.4 and 3.0 across UC Irvine majors with mode 2.8). The effect of existing criteria is not restrictive. This is true also for criteria met by the many UC Irvine students who transfer from other majors into Psychology. They are required to have an overall GPA of at least 2.7 and to have taken the year-long Psych 9A,B,C introductory course and four Psychology core courses with a GPA in these of at least 3.0. UC Irvine transfers, taken together with those who transfer from community colleges, provide a large set of students in their junior and senior years whom the Department attempts to educate *en passant*.

> b. *Training (refer to data in Table 6)*
> > i) *Provide an overview of the Department's undergraduate program, curriculum, and degree requirements. Include a sample 4-year course plan.*

Table 6 data, to have been provided by an extra-Departmental source, are not available at the time of writing. For the B.A. degree in Psychology, the Department requires the following of a student:
- complete the year-long introductory sequence Psych 9A,B,C;
- complete a one-quarter course with laboratory in experimental psychology or research methods (Psych 112A & 112LA, 112M & 112LM, 112P & 112LP);
- complete four upper-division Psychology core courses, including Psych 120A (abnormal), 120D (developmental), 120H (history), 120P (personality), 130A (sensation & perception), 140C (cog sci), 140L (learning), 140M (memory) and 160A (cog neurosci), and
- complete seven additional courses with emphasis in psychology, no more than one of which may be a lower-division course and three of which must be drawn from one of the modules Research Methodologies (Psych 110-119), General Psychology (Psych 120-129), Perception and Sensory Processes (130-139), Learning & Cognition (140-149), Semiotics & Language (150-159), Cognitive Neuroscience (160-169), and Interdisciplinary Studies (170-179).

Honors program requirements include the H101A-B-C Honors Seminar in Psychology and the year-long research capstone H111A & H111LA, H111B & H111LB, H111C & H111LC.

Sample programs for general psychology majors, for students intending to go to graduate school, and for honors program students are shown below.

Sample Programs — Psychology Majors

GENERAL	GRADUATE SCHOOL TRACK	HONORS
Freshman		
Psych. 9A, B, C	Psych. 9A, B, C	Psych. 9A, B, C
2 Intro. Soc. Sci.	Humanities Core	Humanities Core
1 Computer	Math. 2A-B, 7	Math. 2A-B, 7
6 Gen. Ed.		
Sophomore		
3 quarters Statistics[1]	3 quarters Statistics[1]	3 quarters Statistics[1]
3 Core[2]	3 Core[2]	3 Core[2]
6 Gen. Ed./Electives	2 Intro. Soc. Sci.	2 Intro. Soc. Sci.
	1 Computer	1 Computer
	3 Gen. Ed.	3 Gen. Ed.
		Apply to Honors in spring
Junior		
1 Core[2]	1 Core[2]	Psych. H111A-B*-C
3 Module/UDP[3]	3 Module/UDP[3]	Psych. H101A
4 Gen. Ed./Electives	4 Gen. Ed./Electives	1 Core[2]
and select one:	Psych. 112A-B*-C and	2 UDP[3]
Psych. 112A-B*-C and	1 UDP[3]	5 Gen. Ed./Electives
1 UDP[3]		
Psych. 112M and 3 UDP[3]		
Senior		
9 Electives	9 Electives	8 Electives
and select one:	2 Psych. 199	Psych. H101B-C
2 Psych. 199 and	1 Psych. 190	2 Psych. 199
Psych. 190		
3 UDP[3]		

[1] Either Psychology 10A-B-C or Social Science 10A-B-C, with Psychology 10 recommended for those planning to attend graduate school in Psychology.

[2] Psychology core course, an upper-division course with the ending number "0."

[3] UDP in an upper-division Psychology course.   * Taken in satisfaction of the upper-division writing requirement.

ii) *Comment on the undergraduate class-size statistics and percentage of undergraduate courses taught by regular rank faculty. What is the ratio of teaching assistants to student enrollment? Is teaching assistant support adequate?*

Classes vary in size from the 400+ enrollments found in large lecture courses (*e.g.*, the introductory course Psych 9A,B,C) to the 100-300 enrollments in core courses (Psych 130A, 140C) to enrollments less than 100 found in writing, laboratory and like courses.

This year, 76 of 97 undergraduate courses offered (78%) are taught by regular rank faculty. These figures do not take into account independent study (Psych 190) or independent research (Psych 199) courses for undergraduates. The figure 78% is an increase over the previous year's figure (72%) and reflects, in part, the reduction in funds available for Lecturer salary.

There is one teaching assistant per 100 students enrolled at this time. This extreme ratio compromises undergraduate education, graduate training and the ability of instructors to perform activities other than teaching.

iii) *Comment on the time to degree for undergraduate majors. Are required courses accessible and offered with sufficient frequency to ensure timely progress toward degree? What does the Department do to provide academic guidance and support for undergraduate majors?*

The time to degree for the Psychology B.A. is four years. Required courses are taught very frequently to ensure students' timely progress toward degree. For example, the first-year introductory psychology course Psych 9A,B,C is offered three times per academic year, with 9A, B and C taught once per quarter, and is offered again during the Summer session. Guidance and support for the 1100 majors is offered by individual faculty members (*e.g.*, in regularly scheduled office hours), by Undergraduate Program Director Christine Lofgren, and notably by the School of Social Sciences' Counseling Office.

iv) *Referring to the results of the undergraduate student survey (forthcoming from APRS and the Division of Undergraduate Education), how would you characterize student satisfaction with the Department's undergraduate programs? What do undergraduate students perceive to be the key strengths and weaknesses of the Department?*

Results of the APRS undergraduate student survey were not available at the time of writing. There is quite understandably perennial confusion concerning the existence of two similar majors on campus: this Psychology major and the Psychology & Social Behavior major. Many students find a number of upper-division courses too demanding. Many such students lack adequate mathematical and scientific background. Casual observation suggests that students who have transferred from community colleges or who are Psychology and Social Behavior majors are represented disproportionately in this group of under-prepared students. The large number of such students in the major tends to erode classes' rigor and challenge. Yet a smaller number of students feel that their education has suffered precisely through lack of rigor, challenge and instructional resources.

v) *Comment on the Department's efforts at professional socialization for undergraduate students. For example, what percentage of students are involved in honors programs,*

> *independent study, undergraduate research, small seminars, internships, study
> abroad, or student chapters of professional societies? List prestigious awards and/or
> achievements by your undergraduate students.*

vi) *Describe how the Department contributes to the education of UCI students not
majoring in the Department. What courses are offered as breadth courses for non-
majors? What restrictions are placed on non-majors with respect to taking courses
offered by the Department?*

UC Irvine is a national leader in the number of general education courses required of its students: 19.
The third of nine general education categories is Social and Behavioral Sciences; three courses from this
category are required. Psych 7A, 9A, 9B, 9C, 21A, 46A, 56L and 78A fit the bill. The quarter-long
Psych 7A Introduction to Psychology is a very popular breadth course for non-majors and is offered five
times during the 2009/10 academic year and several times during the summer. There are no special
restrictions placed on non-majors with respect to taking courses offered by the Department.

c. *Placement*
i) *What can be said about the prospective job and educational opportunities for your
Department's undergraduate majors? Provide any data available regarding
placement of undergraduate majors in appropriate jobs or graduate programs. What
does the Department do to provide career guidance for undergraduate students?*

The deep recession has caused job prospects for our students to sink to an all-time low. Increases in the
cost of Cal State and UC graduate programs, caused by slashes in State of California support for higher
education, diminish educational opportunities. We have no data regarding placement of undergraduate
majors in appropriate jobs or graduate programs. We understand that the Campus has only recently
started to track alumni and, in particular, recent graduates.

4. *Evaluation of Graduate Program*

a. *Admissions*
i) *Provide an alphabetical list of all current graduate students showing each student's
undergraduate institution, initial quarter of graduate enrollment at UCI, degree
sought, and faculty research advisor (**Table 7**). If no advisor has been selected or
assigned, leave blank.*

ii) *Describe the Department's success in enrolling high quality students in its graduate
programs (Table 8). Describe efforts the Department makes to recruit outstanding
graduate students (including any efforts supported by the Graduate Division funds).*

Table 8 data, to have been provided by an extra-Departmental source, were not available at the time of
writing. Four graduate students defended their dissertations this December 2009. Of the remaining 57,
nine are first-year students (nine originally admitted), 14 are 2nd-year (15 originally admitted), 11 are
3rd-year (16 originally admitted), ten are 4th-year (11 originally admitted), seven are 5th-year, two are
6th-year, and four of whom are their seventh years or beyond. The retention rate is about 86%. The

number of students was 41 at the time of the previous review. GRE scores continue to hover in about the same range as in previous years: on average, 720 Math and 600 Verbal.

Recruiting and retention in the Department of Cognitive Sciences focused during much of the review period on increasing the number of admitted students and on creating conditions for improved student interactions with each other and faculty. The drive for increased program size, amplified particularly for our 2nd- and 3rd-year classes by central directives, collapsed last year due to the budget crisis; our intake of first-year students was smaller. There appear to be contradictory pressures for recruiting this coming year: more graduate students with less money. Central budgeting of teaching assistantships is a primary factor in Department recruiting because the Department is not able to sustain its graduate program through externally-funded research assistantships and fellowships.

Once the top applicants are identified, those individuals are contacted by the most closely related faculty, either by phone or by email. Top admitted graduate students (with the exception of foreign students) are brought in for a visit to the Department, where they meet each other, the faculty, and other graduate students. In recent years, approximately 25 prospective students make 3-day visits to the campus in two groups. The visits include lab tours, meetings with individual faculty, dinner at a faculty member's home or local restaurant, tour of the campus, dinner with current graduate students and a tour of nearby areas (Newport and Laguna beaches).

The Department was pleased to receive for a number of years funds in support of graduate program recruiting from the Graduate Division and matched by the School of Social Sciences. These funds boosted Department operating budget funds for graduate recruiting and helped in one year to refurbish the Department's website. This source of graduate program recruiting funds was not available this past year.

> *iii) Characterize the demographics of the Department's graduate students (Table 8). Describe any efforts the Department makes to recruit and retain members of underrepresented groups. Referring to data from the Office of Equal Opportunity and Diversity on national availability for the academic discipline (Table 9), evaluate the Department's success in recruiting and retaining graduate students from underrepresented groups. Describe and comment on steps that the Department has taken to promote diversity. Is the Department's plan being effectively implemented?*

Neither Table 8 data nor Table 9 data, to have been provided by extra-Departmental sources, were available at the time of writing. The Department continues to draw many students from the State of California, and has a worrisomely large contingent from UC Irvine (16 of 58). Yet all areas of the North American continent are represented, as are Asia, the Middle East and Europe.

Of those 57 students who have not yet defended their dissertations, 22 are female and 35 are male; 39% of current graduate students are female. This ratio falls short of parity. By far the majority of the current students are Caucasian. Eight are of East Asian ethnicity, five are Hispanic, two are from the Indian subcontinent, and one is African-American. Department students have done fairly well in obtaining diversity fellowships of various sorts, including a UCI Faculty Mentor Program Diversity Fellowship, a Cota-Robles Fellowship and a Miguel Velez Fellowship.

The Office of Graduate Studies made available extra funds for graduate diversity recruiting this past year. The funds were obtained from an NSF STEM diversity award and were disbursed centrally among the STEM disciplines. The Department was not invited to share in this award.

>   *b. Training*
>   >   *i) Provide an overview of the Department's graduate program(s), curriculum, and
>   >   degree requirements.   Include a sample course plan for each program.*

The Psychology doctoral program offers a Ph.D., either with or without a Concentration in Cognitive Neuroscience. Requirements differ for students in the Concentration. An M.A. in Psychology is available to doctoral program students.

Coursework requirements for the doctoral degree in Psychology include a first-year quantitative sequence (fulfilled typically by Psych 203A-B-C), a computer programming sequence (Matlab; Psych 205A-B or C), four core elective courses drawn from Psych 210-219, and three more courses normally selected from at least two of the following six modules: Human Cognition (Psychology 220-229); Methodologies and Models (Psychology 230-239); Language Sciences (Psychology 240-249); Human Performance (Psychology 250-259); Cognitive Neuroscience (Psychology 260-269); and Sensation and Perception (Psychology 270-289). Reasonable exceptions and substitutions are granted by the Graduate Program Director.

Each student is expected to conduct research during the first two years and, at the end of the second year, present in a Department colloquium research results of a scope and nature which are potentially publishable in a relevant journal. Advancement to candidacy and the award of a Master's degree depend on the student writing a paper concerning these results that is approved by both the student's advisor and the Graduate Program Director. A further computer-programming language requirement is typically met by satisfactory performance in first-year courses Psych 205A,B,C.

Advancement to candidacy depends on meeting the requirements listed above and an oral presentation to a committee of four department faculty members and a fifth external faculty member. The presentation must demonstrate that the student posseses sufficient preparation and creativity to pursue dissertation research.

The doctoral degree requires a formal presentation in public and defense of dissertation research to a committee of three members of the Department faculty.

Requirements for the Concentration for Cognitive Neuroscience differ primarily in coursework requirements, in the presence of a qualifying examination, and in the requirement for advancement to candidacy. There are 16 students in the Concentration at present (of 57 total in the Psychology doctoral program); this number is expected to increase.

Coursework requirements for students in the Concentration for Cognitive Neuroscience include two of the three quantitative sequence courses Psych 203A and either B or C; one Matlab course (either Psych 205A or B); the cognitive neuroscience core elective Psych 216; two further core elective courses in the range Psych 210-219; two neuroscience methods courses drawn from Psych 236, 265A-B and 268A; two neuroscience courses from the Psych 261-269 module, and two electives. A written qualifying examination is required during the fall quarter of the second year. Advancement to Ph.D. candidacy requires a written research proposal in NIH NRSA predoctoral fellowship format and an oral defense of the proposed research.

ii) Comment on graduate class-size statistics and percentage of graduate courses taught by regular rank faculty (Table 8).

Table 8 data, to have been provided by an extra-Departmental source, were not available at the time of writing. All graduate courses offered by the Department are modest in size and have excellent student/faculty ratios. All but one are taught by line faculty members of the Department. The one exception is the two-quarter-long fMRI course taught by affiliate faculty member Dr. Tugan Muftuler, Assistant Professor of Radiological Sciences.

iii) Comment on progress toward degree for graduate students (Table 8). Describe any efforts made by the Department since the last review to improve time to degree for its graduate students. What else does the Department do to provide academic guidance and support for graduate students?

Table 8 data, to have been provided by an extra-Departmental source, were not available at the time of writing. The nominal time to degree for the Psychology Ph.D. was changed officially from six to five years during the review period. The Department deploys to the best of its ability well-known methods to guide and support its graduate students.

*iv) Comment on your Departments' success in providing adequate financial support for its graduate students including in-state, out-of-state, and international students. Provide data on the percentage of current students receiving support, with the amount of support broken down by year in program (**Table 10**). Provide data on the percentage of students supported by university grants/fellowships, federal grants/fellowships, other extramural grants/fellowships, teaching assistantships, etc. (**Table 11**).*

Table 10 and Table 11 data, to have been provided by extra-Departmental sources, were not available at the time of writing. Associate Dean of Social Sciences Linda Cohen informed us this past year that, for the first time, external grant and fellowship funding of Psychology doctoral program students is approaching the 50% mark, relative to teaching assistantships. This substantial increase in extramural funding of graduate training over the past several years is due largely to an increase in external grant funding and improved diligence in the pursuit of graduate fellowships.

v) Referring to the results of the graduate student survey (forthcoming from APRB), how would you characterize student satisfaction with the Department's graduate programs? What do graduate students perceive to be the key strengths and weaknesses of the Department?

Results of the APRB graduate student survey were not available at the time of writing.

vi) Comment on the Department's efforts at professional socialization for graduate students. Does the Department offer professional issues seminars? What does the department do to train teaching assistants? Does the Department provide opportunities for graduate students to present and discuss their research (e.g., brown bags)? Does the Department provide guidance and assistance to students applying

> *for fellowships and grants? Does the Department take any measures to
> improve/monitor faculty mentoring quality?*

In four years of the period under review, Wright offered Psych 204A/B/C, "Professional/Lab Skills", which introduced students to a number of issues involved in their professional socialization. Teaching assistant training is handled by a training course offered by the Instructional Resources Center. A number of students in the Psychology graduate program have been commended by the Instructional Resources Center for their contributions to training future teaching assistants. The Department as a whole offers no venues for graduate presentations other than those required ones: second-year talk, dissertation proposal, dissertation defense. However, regular presentations by graduate students are a feature of a number of the larger labs and of the Center for Cognitive Neuroscience. The Department moved this past September into the new SBSG building. For the first time, faculty members have offices close to one another. Meeting rooms which would make informal presentations and lunch conversations convenient do exist but are not yet furnished because of the budget crisis. The Department does its best to not interfere with advisor/student relationships.

> vii) *Comment on scholarly productivity of graduate students. Provide a list of
> publications and conference presentations of all current graduate students (**Table
> 12**).*

The scholarly productivity of the graduate students varies from one individual to the next. While there are a number of very productive students in the Psychology doctoral program with bright careers ahead, the same cannot be said for all.

> c. *Placement*
> i) *Provide a list of all graduate students who received their degree in the Department
> since the last graduate review, including the training period (the month/year they
> began the program and when the degree was awarded), the title of the dissertation,
> the dissertation committee chair, and the student's current employment (**Table 13**).*
>
> ii) *Comment on your Department's success in placing its graduates in appropriate
> professional settings.*

Graduate student productivity likely covaries with placement result.

> iii) *Comment on and provide a list of postdoctoral researchers associated with the
> department since the last graduate review (**Table 14**).*

The list of nine postdoctoral researchers in Table 14 for the entirety of the review period does not present a wholly accurate picture. Were one to include postdocs in positions with the title Specialist, then one would find eleven postdocs in the Department, with three more expected shortly.

SECTION 3: STRATEGIC PLAN FOR THE FUTURE

1. *Provide an overall evaluation of the current strengths and weaknesses of the Department and
   suggest a strategic plan for how the research and teaching programs can be improved
   <u>without additional resources</u>.*

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The Department bears a good deal of responsibility for something over which it has very little control: the Psychology major. Control over admissions to the major and acquisition of instructional resources for the major (hiring of faculty, lecturers, TAs) lie external to the Department. Coordination with those in charge of the Psychology and Social Behavior major is not a straightforward matter, as it involves relations between two Schools and their funding.

Were the Psychology major matched well to the Department, then there would be less cause for concern. But it is not. The Psychology major is too large for the number of active line faculty, and the burden of maximizing student head count through coursework offered to non-majors increases the mismatch in size. Furthermore, the Psychology major offers courses in certain areas of psychology in which Department of Cognitive Sciences faculty members have little direct interest or research expertise. This mismatch in subject matter is handled now through the instructional activity of talented and dedicated lecturers, yet the budget for these lecturers is dwindling rapidly. Among the various Schools at UC Irvine, it is the School of Social Sciences which has by far the fewest operating budgetary dollars per student.

The Department should create an undergraduate Cognitive Science major more closely matched to Department size and research. A major with a favorable student/faculty ratio, with wholly faculty-taught courses, with well-defined tracks of study, with rigorous training and with greater opportunities for writing and lab work would be a very welcome addition.

The Department does not generate sufficient external funding to support its own graduate program. In consequence, the majority of its graduate students continue to be supported through teaching assistantships--an arrangement that tends to hinder research training. In addition, these teaching assistantships are a financial burden on both the School and the Campus, despite the fact that financial support packages offered to incoming students based on teaching assistantships are not competitive.

The Department should continue to increase external funding. Success would improve research productivity and the research standing of the Department. Success would provide the Department the financial means to compete more successfully for the best graduate students by extending competitive research assistantship offers.

Finally, there are many talented graduate students interested in Department faculty work who have little desire to obtain a Ph.D. in Psychology. The Department should work to transition the Concentration in Cognitive Neuroscience to a full-fledged and independent Cognitive Neuroscience doctoral program. Any further initiatives along these lines should be welcomed for consideration.

2. *If the Department were given additional resources, suggest a strategic plan for how these resources would be used to improve the research and teaching programs.*

The number of active line faculty should be increased substantially. Such an increase would help the Department address problems created by the very high ratio of undergraduate Psychology majors to faculty. It would make possible rigorous training in all areas of Cognitive Science. It would serve to increase the breadth of Department research to a level required for high national stature.

The Department favors a liberalization in the School's teaching buyout policy and a formal reduction in teaching load so that the instructional burden borne by active line faculty matches more closely that of competing institutions.

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The number of staff positions attached to the Department should be increased. The substantial increase in external funding and planned further increase necessitates an administrative analyst position to help with grant processing as well as with data collection and analysis concerning Department function. A second analyst position would help tremendously with Psychology major and Psychology doctoral program management (*e.g.*, course and classroom scheduling, book purchasing, data management).

Higher quality laboratory facilities of greater size should be provided; the Department continues hopeful concerning unassigned space in SBSG.

3. *Provide a copy of the most recent Strategic Plan that was transmitted to the Executive Vice Chancellor and Provost.*

Attached.

4. *What are the emerging trends in your field nationally in terms of research and teaching specialties? How do your strategic plans for future faculty recruitment, new graduate or undergraduate programs and curriculum revisions fit with those emerging trends?*

The most significant advance in the study of color vision over the past forty years was the identification and characterization of the genetic basis for individual variation in photoreceptoral pigmentation. A host of color vision deficiencies that had been characterized behaviorally (red-green color blindness, *etc.*) were immediately placed on a firmer scientific footing with these molecular biological developments. The field of human behavioral genetics seeks a similar grounding for a wider variety of human behaviors. Work of this sort is increasing in scope, finds ready external funding at NIH, and is typically conducted in combination with behavioral and neuroscientific methodologies used by Department faculty: a good fit.

Future, funding and fit are key aspects of research areas in cognitive science to weigh when hiring strategically. The three Fs are found in a variety of research areas. The following sample of areas increases breadth while sustaining depth in core areas: human behavioral genetics, neurolinguistics and/or psycho-linguistics, computational neuroscience, social cognitive neuroscience, artificial intelligence / robotics, human-computer interaction, higher-level cognition: learning & memory, higher-level cognition: decision-making.