Aims of the International Graphonomics Society (IGS)

During the second international graphonomics conference in 1985, the decision was made to establish the International Graphonomics Society (IGS). The general aims of the IGS are the advancement of research in the field of graphonomics. These aims include an exchange of views and expertise, joint-project research, and the dissemination and application of knowledge wherever appropriate. Some means to achieve these goals are: the organization of conferences and workshops and the publication of their proceedings, the stimulation of communication and research contacts by any other means, the transmission of information through a regular bulletin (BIGS), an electronic list (Scrib-L) and the maintenance of a graphonomics research directory. The IGS has the status of a legal non-profit organization. It was established as a foundation ('stichting') under the law of the Netherlands on January 30th, 1987.

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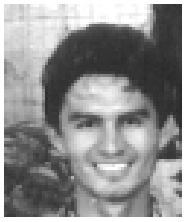


From the Editors

This is the 32th electronic Bulletin of the International Graphonomics Society (eBIGS) 17, No. 1. As always, readers are most welcome to submit letters, regular or occasional columns, book reviews, or news. Consider submitting brief tutorial papers or research notes. Starting with this issue, the co-editors will alternate in the preparation and editing of eBIGS. Please send correspondence to José (pepeum@umd.edu) for the Spring issue and to Graham (asgleedham@ntu.edu.sg) for the Fall issue. Questions about this issue (eBIGS 17,1) should be addressed to José L Contreras-Vidal, Ph.D., Department of Kinesiology, University of Maryland, 2363 HHP Bldg, College Park, MD 20742.

This issue of BIGS contains a book review by Dr. Arnold Thomassen, the First Call for Papers for the IGS2005 conference in Salerno, Italy, a commentary on participation in the activities of IGS, and a survey about the interest of the IGS membership in launching a peer-reviewed Journal for IGS. In addition, a list of news and recent publications relevant to IGS membership are compiled in this issue.

José L. Contreras-Vidal
Graham Leedham

Message from the President

Montreal, Spring 2004

Dear Members,

As it has been decided at our recent meeting in Scottsdale, it is time for IGS to update its mission and expand its horizons. The Board has recently started a reflection process to explore several opportunities to attract new members, expand our domain of activities without loosing our basic membership whose major concern is still linked to handwriting and drawing. Our efforts focus on two aspects: fundamental and practical.

From a basic point of view, we have started discussions about the potential changes that could be made to our mission, the new disciplines that could be incorporated to our research fields to take advantage of the new scientific developments that could be of interest to our members and have a direct and significant impact on the organization of our future conferences.

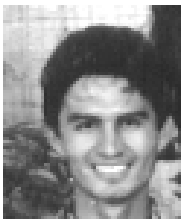
From a more practical point of view, we are also in the process of reevaluating how the society works, how to make it more dynamic, how to improve communication between members…

In this perspective, we will greatly appreciate receiving any comments and suggestions that could help us reaching our goal of increasing the scope and impact of IGS.

Looking forward to “hearing emails” from you,

Réjean Plamondon
President of IGS
Email: rejean.plamondon@polymtl.ca

A commentary about participation in IGS



Dear IGS members,

As mentioned in the President's column, the IGS Board has initiated a reflection process to evaluate, refine and advance the goals of our Society. Issues of concern involve the attraction of new members, increase participation of the IGS membership in the Board and IGS activities, our own peer-reviewed journal, and the increased multidisciplinary character of research related to handwriting and drawing.

With the IGS2005 Conference, most of the current IGS Board members will complete or have completed their terms in Office (see bottom of page 2 of this issue). It is critical that the IGS membership be involved in setting future directions and goals for the Society, and I ask for your direct involvement and participation in the IGS Board. If you are interested in becoming part of the IGS Board, or would like to provide comments on how the Society should evolve, please do not hesitate to contact the President or members of the Board through email.

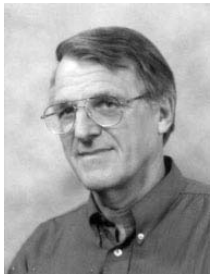
Another issue that requires attention is the structure of the IGS Board itself. Although the current Board membership represents most research areas within the IGS membership, it is critical that we plan *at-large* and provide flexibility to change in the interests of the IGS membership as well as continuity in the activities of the Board. I envision a Board structure with 2 year terms that would include: Current President, President-Elect, Past-President, Editor (eBIGS/Journal), Communications (Information and Web), Treasurer, Secretary (and Liaison to other Societies), and one member from at least five of the defined IGS research areas. Preferably, the President positions should rotate among the IGS areas so that in the long term all areas should appropriately be represented at the maximum level within the Society, while maintaining continuity and follow-up through the President's involvement in three consecutive Office terms. I would like to hear from all your thoughts about this proposal.

Sincerely,

José L. Contreras-Vidal
eBIGS Co-Editor
pepeum@umd.edu

IGS Review Feature

Dysgraphia: Cognitive processes, remediation, and neural substrates.



Reviewed by Arnold J.W.M. Thomassen

Brenda Rapp & Pelagie M. Beeson (Eds.), (2003). Dysgraphia: Cognitive processes, remediation, and neural substrates. Special double issue of Aphasiology (Vol. 17, 6/7, pp. 531-683). Philadelphia, PA./ Basingstoke, Hampshire: Psychology Press, Taylor & Francis. (GBP 27.95).

In spite of the impressive endeavours of the IGS over the past decades, handwriting as one of the four modalities of language use (listening, speaking, reading and writing), has received by far the least attention in research. Comparatively, the study of writing disorders (agraphia and dysgraphia) has likewise been neglected. As a result, our understanding of the cognitive and neural bases of written language production is still rather poor. As a minor counterweight, we recently saw the publication of a special double issue of *Aphasiology,* 'an international, interdisciplinary journal devoted to all aspects of language impairment and related disorders resulting from brain damage'. The 153-page issue comprises three rather divergent sections, concerned, respectively, with the cognitive processes of disturbed written-language production, with the treatment of writing deficits (acquired dysgraphia), and with the neural substrates of handwriting. In this review, I will concentrate on the third section, summarising its rich set of findings. The publication includes some work on the writing of non-alphabetic, logographic Chinese and Japanese characters, which may shed light on similarities and differences across languages and written-language codes (See A.R. Lecours (1996) and Thomassen (1997) for a review).

The first section contains three single-case studies (i, ii, iii) of dysgraphic individuals, studying their *cognitive* processing and representation in spelling. (i) From their detailed study of correspondences of errors in spelling and in reading words and pseudowords, Tainturier and Rapp conclude that (in their subject) reading and spelling share a graphemic buffering component, i.e., a short-term activation system that temporarily holds abstract letter representations for processing (in reading) and for production (in writing). (ii) In order to pinpoint the basis of the robustness of the spelling of familiar words, Weekes et al. analysed the spelling of a patient with surface dysgraphia, producing 'legitimate' alternative spellings of word components (e.g., 'chare' for 'chair'). By means of regression analysis and analysis of variance they parsed out the effect of age of acquisition from that of word frequency. They found that an early age of acquisition has a positive effect on spelling accuracy only in the case of words with irregular orthography (e.g., 'yacht). Late acquisition of irregular words will lead to spelling errors. Moreover, an independent effect of word frequency on spelling accuracy was not found. (iii) Reich et al. performed an extensive study of a Chinese dysgraphic patient. Among a whole series of other tasks, they dictated disambiguated homophones of low frequency, and observed that this patient often wrote the Chinese character for the high-frequency homophone, i.e., appropriate for the phonology of the target word, but not for its meaning. This competition effect was also present, though to a much smaller extent, when the patient was asked to write the names of pictured objects. This is taken as evidence that there is direct activation of orthographic representations by phonology in Chinese, at least for higher-frequency words.

The second section of the special issue contains two articles (iv, v) devoted to *remedial* aspects. (iv) In the first of these, Raymer et al. diagnosed a stroke patient with spelling difficulties as having an impaired graphemic buffer as well as an affected orthographic output lexicon. They trained him successfully through a copy-and-recall procedure. Their detailed analysis of errors in the beginnings and endings of trained and untrained words and non-words, showed that the generalized spelling improvements reflected improvement in the orthographic output lexicon as well as – to some extent – in the graphemic buffer. (v) In the subsequent article, Clausen and Beeson report on the writing treatment of four persons with severe aphasia and agraphia. Their remedial approach involved the retraining of spellings and the use of single, relevant written words in a group-conversation context. All participants showed considerable communication improvement by using written-word conversation.

The third section, with two articles (vi, vii) on the *neural* substrates of writing, opens with (vi) a thorough functional magnetic resonance imaging (fMRI) study by Beeson and six coworkers. The reported research was undertaken to identify the cerebral mechanisms for the “central” linguistic and the “peripheral” motor components of normal English handwriting. In the whole-body MRI system, twelve right-handed writers performed five tasks in two protocols, viz., (1) generative writing of single words from a specified category; (2) writing the letters of the alphabet; (3) drawing repetitive circles; (4) words, the same as 1 above; (5) subvocal generative naming of words, like 1 above; and a silent rest. Using the cognitive subtraction method, the contrasts to differentiate cerebral involvement in the linguistic task features from that in the motor components of writing, were accomplished as follows: (1-3), (1-2), (2-3), (4-5).

Subtraction (1-3) was employed to provide information on the retrieval of lexical-semantic and orthographic information as well as on the planning and execution of hand movements for writing letters (without the motor control of holding and moving the pen). Subtraction (1-2) served to gain information on the semantically guided retrieval of orthographic word forms (without the actual writing of letters). Subtraction (2-3) aimed at information on the graphomotor programming and execution of handwriting movements (without their lexical-semantic content). Subtraction (4-5) intended to provide information on the orthographic and motor components (without their semantic and phonological aspects). The contrasts with the silent rest yielded results widespread over the entire network of brain regions; they were not reported because they were not of direct value for the intended goal.

Apart from the analysis of the whole-brain activation, two small brain portions were examined in detail as predefined areas of interest, viz., Brodman’s area (= BA) 39 (left angular gyrus) and BA 37 (left posterior inferior temporal lobe). The group results are displayed as surface-rendered projections (Plate 1) and in coronal and axial sections of a standardised atlas brain (Plate 2). Moreover, the results of the analysis of the areas of interest are shown in sagittal sections (Plate 3). From the tables in this study, it appears that in all the mentioned contrasts a large number of cortical and subcortical areas, spread out over several brain regions, show significant activation differences. Contrasts (1-3) and (1-2) both have 29 ‘difference’ areas, contrast (2-3) has 14 and contrast (4-5) has 15 such areas. Following the authors’ discussion, I will review the main findings of this study in two paragraphs, dedicated to orthography and motor control, respectively.

Retrieval of orthography. It has been argued for over a century (Dejerine, 1891) that the left angular gyrus (BA 39) subserves the spelling of words, and that lesions in this area

result in lexical agraphia (e.g., Roeltgen & Heilman, 1984). The present study, however, confirmed this only for a few of the subjects. Instead, it showed that in all subjects writing words was associated with activation in the left posterior inferior temporal cortex (PITC) (BA 37, 20). It thus seems that orthographic representations are located here, although it is to be noted that - as it appears from this study and others - also naming and reading (both reflecting semantic and phonological processing) are associated with activation of this general anatomical region.
It is suggested that this region may perhaps be subdivided into a more posterior part (BA 37 extending into BA 19) for the retrieval of letter shapes, a more anterior part (of BA 37) for information on word forms, and even more anterior parts for the phonological and semantic processing of words. Moreover, the results showed that the left prefrontal cortical region, activated both in naming and in writing, is involved in the semantically guided retrieval of lexical representations.

Motor control of writing. The global contrast between writing and naming (4-5) revealed not only extensive activation in the left sensorimotor cortex for the hand, but also in the superior parietal lobe, Exner's area (BA 6), bilateral supplementary motor area (SMA), and the right cerebellum. As it appears, these areas play an important role in the programming and execution of handwriting movements. More specifically, the superior parietal and frontal premotor areas are substrates for translating orthographic information into the appropriate hand movements: activation in the left intraparietal sulcus for words and the superior parietal lobule for words and letters. It thus appears that writing letters of the alphabet imposes fewer demands on motor programming than writing words. This is in agreement with recent findings by Seitz et al. (1997) that demonstrate the more critical role of the intraparietal sulcus for more complex handwriting movements. Furthermore, writing words and letters involved activation in the dorsolateral premotor region, with the suggestion that more complex demands (words) activate sites further removed from the area of the hand in the primary motor strip.

(vii) The second article in the 'neural substrates' section (and the final contribution to the publication under review) is a study by Nakamura and Kouider on the functional neuro-anatomy of the two Japanese writing systems 'kanji' and 'kana'. The first part of this study is devoted to neuro-imaging studies of handwriting in general, aimed at the cerebral mechanisms for the more "peripheral" motor aspects of the skill; the second part reviews recent lesion and imaging data from Japanese writers to gain insight into the common and specific mechanisms for producing phonographic (syllabic) kana, and logographic (ideographic) kanji script.

Handwriting as a motor skill. A basic set of brain regions that are activated during writing involve the left fronto-parietal region from the premotor areas to the left posterior parietal cortex. Abstract kinematic representations of graphomotor trajectories of letter forms, independent of effector limb seem to depend on reciprocal connections between premotor cortex and posterior parietal area, including superior and inferior parietal lobules, and bilateral fronto-parietal regions, including lateral premotor cortex (SMA, BA 6), posterior parietal cortex (BA 7), and left inferior parietal areas (BA 40), especially when writing slowly, i.e., under feedback control. All this is independent of whether the left or right hand is used for writing. Motor imagery of handwriting seems to employ nearly the same set of brain structures as does overt movement. The parietal cortex seems to be the neural substrate of visual, kinaesthetic, and motor regions which may contain the motor programs. The left lateral premotor cortex (BA 6) corresponds to Exner's writing centre, damage of which is known to result in pure agraphia. The left superior parietal lobule (BA

7) is associated with motor execution of writing as evidenced by studies of apraxic agraphia. The parietal lobe integrates sensory feedback during complex movements. Furthermore, the subcortical involvement of the basal ganglia and the cerebellum are also involved, as is illustrated by writer's cramp and Parkinson's disease.

Neuropsychological studies of writing kanji and kana script. Kana has a transparent one-to-one grapheme-phoneme (character-sound) correspondence. In kanji, with its 'direct' visual-semantic links, the relation between orthography and phonology is opaque. A common form of agraphia in Japan is kanji-selective, i.e., the writer cannot write kanji characters, while his writing of kana is undisturbed. In other languages, such as English, a related, well-known form of agraphia, selective for words with irregular spelling, is called lexical agraphia. This selectivity in both seems to have a similar basis: kana and regularly spelled English words can be written (in an alternative way) on account of their sounds. The literature suggests that in kana writing a major role is played by fronto-parietal cortical connections including the infero-lateral frontal area and the motor association cortex. In kanji writing, more posterior inferior temporo-occipital regions (BA 37) are involved for the visual graphic forms. Lesions in this area result in the just mentioned kanji-selective agraphia, so that it may be assumed that the visual-spatial representations of the kanji characters are stored here, where they act as reference images for generating the intended motor sequence.

Kanji representations may be both visuo-spatial and grapho-motor, but probably not abstract (amodal), like alphabetic and kana representations. However, kanji agraphia and lexical agraphia are not identical. For example, there is a difference in lesion site for lexical agraphia – left inferior parietal area - and for kanji agraphia – postero-inferior temporal cortex (PITC). The authors also present a set of studies reporting on agraphia selective for kana. The lesion sites are mostly either the ventro-lateral frontal area, or the inferior parietal cortex; but never in the PITC. The importance of the fronto-parietal network for writing kana is clear, as was also illustrated by the activation sites of normal writers (lateral premotor cortex to the posterior parietal area). The results may be interpreted as reflecting "dysfunction of the graphemic buffer for storing temporally graphemic representations of words to be written". It is uncertain whether there is any brain region specifically required for writing kana, but not for writing kanji, although kana may place a greater demand on the phonological system, and kanji on the posterior temporal system: the temporo-occipital region is thus seen as an additional device, with the more basic fronto-parietal system necessary for writing the phonographic letters: the generalised motor representation for writing.

An earlier fMRI study by Nakamura et al.(2000) demonstrated that the same posterior temporal region (including the left PITC) is active for writing and for mental imagery of kanji. But also, in some subjects, the visual imagery of kana activates PITC. It seems that normal Japanese writers exploit imagery-based information as a reference to control the complex stroke sequences of kanji. But the actual writing also depends heavily on stored grapho-motor patterns, which need to be integrated with visual graphic images during the motor execution of writing. It is suggested that the several discrete constituents of the complex kanji characters may be written out automatically, based on their motor representation (acquired through school drill), whereas the spatial organisation of these discrete constituents may depend on visual memory. The authors conclude that for the motor execution of the handwriting skill, in both kana and kanji, the fronto-parietal circuit constitutes the basic cortical substrate, and the perisylvian area for auditory-verbal processing. Visuo-spatial information of graphic forms is seen as an additional component,

of special importance for kanji-writing; it is subserved by PITC. Kana representations may also be represented here, but they are less crucial in the writing task.

While it is appreciated that handwriting is achieved by a complex of many processing components, modularly organised in the brain, their precise function and exact location may vary considerably across individuals. There may be differences in cyto-architecture, which in turn could result from genetic and developmental processes. Finally, and importantly, there are largely varying mental strategies across individuals, as well as opportunities for these as offered by different writing systems, of which kana and kanji present nice examples.

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Is IGS ready for its own Journal?

(This column appeared in the past issue of eBIGS and it is reprinted herein)

We would like to know the interest of the IGS members in having their own peer-reviewed *International Journal of Graphonomics Research.* In this regard, the Editors would like to ask you to email your answers to the following questions to pepeum@umd.edu (José L Contreras-Vidal, University of Maryland-College Park):

1. Would you like to see IGS launching a peer-reviewed Journal, e.g., *The International Journal of Graphonomics Research?*
2. Would you prefer printed, on-line, or printed/on-line versions of the *Journal*?
3. Would you be interested in obtaining open access to the online *Journal*? For members-only? For the at-large scientific community?
4. Would you prefer quarterly, bi-monthly or annual frequency for the *Journal*?
5. Would you be interested in publishing in the *Journal*? If so, how many manuscripts would you expect to submit per year?
6. Would you be willing to pay a publishing fee to help defray publishing costs? If so, how much?
7. Would you be willing to review manuscripts for the Journal? If so, how many manuscripts per year?
8. Who would you recommend for a potential position in the Editorial Board/Editorial Sections?
9. What Sections (e.g., Forensic Science, Basic Neuroscience, Education, Clinical Neuroscience, Paleography, Engineering, Computer Science, Cognitive Science, Artificial Intelligence, Positions Open, Current Conferences; Reviews, etc.) of the Journal would you like to see included?
10. Would you like selected (after full peer-review) articles from each biannual IGS conference published in the *Journal*?

Based on your responses, I will compile a summary statement to be distributed at the next IGS2005 conference, and at the Business Meeting of the Society.

Thank you for your time!

José L Contreras-Vidal
Co-Editor, eBIGS

Special Issue of Motor Control following IGS 2003

The Eleventh Biennial Conference of the IGS on 2-5 November, 2003 in Scottsdale, Arizona (USA) IGS2003 was a success with 77 presentations and 101 participants of which 60 were members and 23 were students. A special issue of *Motor Control* is expected to be published in October, 2004 based on a peer-reviewed selection of high-quality motor control papers presented at IGS2003. The Special issue will include in order:

Van Gemmert, A. W. A., & Teulings, H. L. (2004). Connecting sciences using graphonomic research. *Motor Control*, 4 (Guest editorial), In press.

Bullock D. (2004). From parallel sequence representations to calligraphic control: A conspiracy of neural circuits. *Motor Control*, 4, In press.

Latash, M. L., Shim, J. K., Gao, F., & Zatsiorsky, V. M. (2004). Rotational equilibrium during multi-digit pressing and prehension. *Motor Control*, 4, In press.

Sallagoïty, I., Athènes, S., Zanone, P. G., & Albaret, J. M. (2004). Stability of coordination patterns in handwriting: Effects of speed and hand. *Motor Control*, 4, In press.

Ketcham C. J., Dounskaia N. V., & Stelmach, G. E. (2004). Age-related differences in the control of multijoint movements. *Motor Control*, 4, In press.

Smits-Engelsman, B. C. M., Van Galen, G. P., & Duysens J. (2004). Force levels in uni-and bimanual isometric tasks affect variability measures differently throughout lifespan. *Motor Control*, 4, In press.

Kagerer, F. A., Bo, J., Contreras-Vidal, J. L., & Clark, J. E. (2004). Visuomotor adaptation in children with developmental coordination disorder. *Motor Control*, 4, In press.

Tucha, 0., & Lange, K. W. (2004). Handwriting and attention in children and adults with attention deficit hyperactivity disorder. *Motor Control*, 4, In press.

Rohrer, B., Fasoli, S., Krebs, H. I., Volpe, B., Frontera, W. R., Stein, J., & Hogan, N. (2004). Submovements grow larger, fewer, and more blended during stroke recovery. *Motor Control*, 4, In press.

Alberts, J. L., Elder, C. M., Okun, M. S., & Vitek, J. L. (2004). Comparison of pallidal and subthalamic stimulation on force control in patient's with Parkinson's disease. *Motor Control*, 4, In press.

Van Mier, H. I., Perlmutter, J. S., & Petersen, S. E. (2004). Functional changes in brain activity during acquisition and practice of movement sequences. *Motor Control*, 4, In press.

Smits-Engelsman, B. C. M., Swinnen, S. P., & Duysens, J. (2004). Are graphomotor tasks affected by working in the contralateral hemi-space in 6- to 10-year-old children? *Motor Control*, 4, In press.

Mistry, S., & Contreras-Vidal, J. L. (2004). Learning multiple visuomotor transformations: Adaptation and context-dependent recall. *Motor Control*, 4, In press.

Woch, A., & Plamondon, R. (2004). Using the framework of the kinematic theory for the definition of a movement primitive. *Motor Control*, 4, In press.

In addition, a special issue of the *International Journal of Pattern Recognition and Artificial Intelligence* is in the final stages. Authors are working on their revisions. It is expected that the *International Journal of Pattern Recognition and Artificial Intelligence*, Volume 18, Number 6, 2004 will be the special issue.

The contributions for the special issue of the *Journal of Forensic Document Examination* are under review. We are aiming to get the contributions published in the Fall issue of the *Journal of Forensic Document Examination*.

IGS News

- The Bulletin of the International Graphonomics Society is now published on-line and the printed version has been discontinued. To make sure you receive the IGS Bulletin, Society information, and other valuable information please update your email address by sending an email to the Secretary/Treasurer at vangemmert@asu.edu.

IGS2005

School of Engineering, University of Salerno
Fisciano, ITALY, 26-29 June 2005

PRELIMINARY CALL FOR PAPERS

General Chairman
Angelo Marcelli
University of Salerno, ITALY

Co-chairman
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Marvin Simner
University of Western Ontario, CANADA
Hans-Leo Teulings
NeuroScript, USA
Arnold Thomassen
NICI, University of Nijmegen, NL
Arend Van Gemmert
Arizona State University, USA

Important dates:
Paper submission: December 15, 2004
Authors notification: March 15, 2005
Camera-ready version: April 30, 2005
Author registration: April 30, 2005

Early submission*: September 30, 2004
Early notification*: November 15, 2004
** For authors who need the notification before the end of the year.*

At least one author for each accepted paper must register for the conference.

General Information

IGS2005 is the 12th Biennial Conference of the International Graphonomics Society and will take place in Salerno, along the Southern coast of Italy, between 26th and 29th June 2005.

The Conference theme is "**Advances in Graphonomics: Perceiving, Deciding, Acting**", and will be a single track international forum for discussion on recent advances in the fields of science and technology of handwriting and other graphic skills.

Topics of interest are:

Handwriting generation: Biomechanical models; Cognitive models; Neural network based models;
Handwriting recognition: Human reading; Pen computing; On-line and off-line recognition; Writer identification and recognition; Signature verification, Interface technology;
Handwriting education: Handwriting and drawing skill evaluation; Teaching handwriting; Learning handwriting;
Handwriting analysis: Recording; Tracking; Processing; Tools;
Neuroscience: Development, planning and control of writing and drawing movement;
Medical applications: Handwriting disorders; Disorders and drugs;
Forensic applications: Handwriting features; Signature verification; Methods and Computer Tools (e.g. personnel screening devices, etc.)

Submission details

Submitted papers should fall in one of the following categories: survey or tutorial, research and on-going research.
Survey or tutorial papers should present the state of the art for any of the topics listed above, possibly focusing on the role that interdisciplinarity has played in shaping that specific field.

Research papers should describe either theoretical or experimental works that have reached conclusive results.

On-going research papers should describe partial/preliminary results, successful applications of well-known techniques to specific domains, original or enhanced algorithms, experimental methodologies.

For further information about the Conference, please visit www.igs2005.org

For more information about the Society, please visit www.cedar.buffalo.edu/igs

A Position Statement by the International Graphonomics Society on the Use of Graphology in Personnel Selection Testing*

Marvin L. Simner and Richard D. Goffin
Department of Psychology
University of Western Ontario

Abstract

Among the various tests employed in personnel selection, handwriting analysis, or graphology, has enjoyed long-standing international popularity despite being highly contentious. This report contains not only an evaluation of the current published scientific reviews on the use of graphology in personnel selection, but also an evaluation of several additional studies graphologists provided that seemed to have been overlooked.

The latter were obtained by contacting nine of the foremost institutes offering graphological training, consulting services, or both to ensure that the graphologists themselves would be fairly represented. Even with this additional information we found no reason to counter conclusions the scientific community has reached, namely that (a) the continued use of graphology in personnel selection could prove harmful to many individuals and firms, and (b) it fails to approach the level of criterion validity of other widely available and less expensive screening devices used for personnel selection. This article ends with a position statement about this matter, which the International Graphonomics Society endorsed.

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Recent Publications

In this section of BIGS the bibliographical details of recent publications relevant to the IGS are reported. In addition to publications by IGS members that were reported to the IGS office, the results of searches in Medline are given that were directed at papers on handwriting and related graphic skills, which were published during the six months prior to the distribution of BIGS. IGS members are invited to report the bibliographic details of their recent publications to the IGS editors.

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van Heijst JJ, Vos JE, Bullock D. Development in a biologically inspired spinal neural network for movement control. Neural Netw. 1998 Oct;11(7-8):1305-1316.

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Schoemaker MM, Niemeijer AS, Reynders K, Smits-Engelsman BC. Effectiveness of neuromotor task training for children with developmental coordination disorder: a pilot study. Neural Plast. 2003;10(1-2):155-63.

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