Science Newsletter

Contents

Introduction:

There are 3 main elements in the Science Newsletter is composed. In the first part, we provide articles about central issues for each discipline in this university, and they are provided with one subject for a time. In the second part, we select articles from the top journals in the whole science research, and most of them are from Nature and Science. In the third part, we post information about calling papers for international conferences. Hopefully, some of the information in this manuscript may be useful for those who are dedicating to scientific career. Besides, the journals are also posted on the website of our library, and they are available to be accessed any time at http://lib.jsut.edu.cn/2018/1015/c5474a113860/page.htm. If there are any questions or suggestions, please send e-mails to 289595883@qq.com in no hesitate.

Ⅰ Topics

The key word of this month is **Developmental and Educational Psychology.**
We list several articles which are related to the top concerned topics of computer science researches. The articles are classified in 5 categories, and they are: **Autistic disorde, Mental disorders, Adolescent (age group), Attention deficit hyperactivity disorder** and **Children**. Also, the listed articles are all arranged in a descending sort of impact factor in order to make it convenient to read. There are also links to both official site and full text for each article.

AUTISTIC DISORDER

Journal Of The American Academy Of Child And Adolescent Psychiatry (impact factor: 13.113)
1 ☒

Bumetanide for Core Symptoms of Autism Spectrum Disorder (BAMBI): A Single Center, Double-Blinded, Participant-Randomized, Placebo-Controlled, Phase-2 Superiority Trial

Jan J Sprengers · Dorinde M van Andel · Nicolaas P A Zuithoff, et. al

Abstract:
Objective
Recent trials have indicated positive effects of bumetanide in autism spectrum disorder

(ASD). We tested efficacy of bumetanide on core symptom domains using a single center, parallel-group, participant-randomized, double-blind, placebo-controlled phase-2 superiority trial in a tertiary hospital in the Netherlands.

Method

Unmedicated children aged 7 to 15 years with ASD and IQ ≥ 55 were block-randomized 1:1 to oral-solution bumetanide versus placebo, titrated to a maximum of 1.0 mg twice daily for 91 days (D91), followed by a 28-day wash-out period. The primary outcome was difference in Social Responsiveness Scale−2 (SRS-2) total score at D91, analyzed by modified intention-to-treat with linear mixed models.

Results

A total of 92 participants (mean age 10.5 [SD 2.4] years) enrolled between June 2016 and December 2018. In all, 47 children were allocated to bumetanide and 45 to placebo. Two participants dropped out per treatment arm. After 91 days, bumetanide was not superior to placebo on the primary outcome, the SRS-2 (mean difference −3.16, 95% CI = −9.68 to 3.37, p = .338). A superior effect was found on one of the secondary outcomes, the Repetitive Behavior Scale−Revised (mean difference −4.16, 95% CI = −8.06 to −0.25, p = .0375), but not on the Sensory Profile (mean difference 5.64, 95% CI = −11.30 to 22.57, p = .508) or the Aberrant Behavior Checklist Irritability Subscale (mean difference −0.65, 95% CI = −2.83 to 1.52, p = .552). No significant wash-out effect was observed. Significant adverse effects were predominantly diuretic effects (orthostatic hypotension (17 [36%] versus 5 [11%], p = .007); hypokalemia (24 [51%] versus 0 [0%], p < .0001), the occurrence of which did not statistically influence treatment outcome.

Conclusion

The trial outcome was negative in terms of no superior effect on the primary outcome. The secondary outcomes suggest efficacy on repetitive behavior symptoms for a subset of patients.

Editorial Perspective: Perils and promise for child and adolescent sleep and associated psychopathology during the COVID‐19 pandemic

Stephen P. Becker · Alice M. Gregory

Abstract:

It is anticipated that the novel coronavirus disease 2019 (COVID-19) pandemic and associated societal response will have wide-ranging impacts on youth development and mental health. Sleep is crucial for child and adolescent health and well-being, and the potential for sleep problems to emerge or worsen during and following the pandemic is high. This may be particularly true for children and adolescents who are at heightened risk for the onset of sleep and mental health disturbances and for those whom developmental changes impacting sleep are rapidly occurring. Youth with preexisting psychopathologies (including anxiety and depression) and neurodevelopmental conditions (including attention-deficit/hyperactivity disorder and autism spectrum

disorder) could be especially vulnerable to disturbed sleep during this period of change and uncertainty. It is thus imperative that sleep considerations be part of research and clinical initiatives aimed at understanding and mitigating the impact of the COVID-19 pandemic in children and adolescents. This article considers ways in which the pandemic may impact sleep, including research and clinical implications.

Understanding Hippocampal Development in Young Children With Autism Spectrum Disorder

Vanessa P Reinhardt · Ana-Maria Iosif · Lauren Libero, et. al

Abstract:

Objective

We examined growth trajectories of hippocampal volume (HV) in early childhood in a longitudinal cohort of male and female participants with autism spectrum disorder (ASD) and typically developing (TD) individuals, and investigated HV in those with large brains. Relations between factors potentially associated with hippocampal size and growth were investigated.

Method

Participants received 1 to 3 structural magnetic resonance imaging scans between ages 25 and 80 months (unique participants: ASD, n =200; TD, n =110; total longitudinal scans, n = 593). HV growth during this period was examined using mixed-effects linear models. Associations between early HV and growth rates, and IQ and adaptive functioning, were evaluated.

Results

After accounting for cerebral hemisphere volume, male participants exhibited larger left and right HV than female participants. Hippocampal growth rates did not differ by sex. In children with larger hemisphere volumes, male and female participants with ASD had relatively larger HV than TD participants of similar hemisphere volume. This effect was present in a broader group than only those with disproportionate megalencephaly (male participants with large cerebral volumes relative to body size). Right hippocampi were larger than left hippocampi in both groups and sexes. Right versus left volume differences were greater for ASD. After adjusting for hemisphere volume, male participants with ASD showed a significant positive association between right hippocampal growth and adaptive behavior.

Conclusion

HV was relatively greater in ASD in analyses adjusting for hemisphere volume, whereas only subtle differences were observed in HV and growth between participants with ASD and TD participants in unadjusted analyses, suggesting that ASD involves atypical coupling between HV and brain size.

Training Community Therapists to Deliver a Mental Health Intervention for Autism Spectrum Disorder: Changes in Caregiver Outcomes and Mediating Role on Child Outcomes

Lauren Brookman-Frazee · Colby Chlebowski · Miguel Villodas, et. Al

Abstract:

Objective

This study examines the impact of training therapists to deliver "An Individualized Mental Health Intervention for Autism Spectrum Disorder (ASD)" (AIM HI) for children with autism spectrum disorder on caregiver outcomes and the mediating role of changes in caregiver outcomes on child outcomes.

Method

Data were drawn from a cluster randomized trial conducted in 29 publicly funded mental health programs randomized to receive AIM HI training or usual care. Therapists were recruited from enrolled programs and child/caregiver participants enrolled from therapists' caseloads. Participants included 202 caregivers of children 5 to 13 years of age with autism spectrum disorder. Caregiver strain and sense of competence were assessed at baseline and 6 month postbaseline. Child behaviors were assessed at baseline and 6, 12, and 18 months postbaseline. Therapist delivery of evidence-based intervention strategies were assessed between baseline and 6 months.

Results

A significant training effect was observed for caregiver sense of competence, with AIM HI caregivers reporting significantly greater improvement relative to usual care. There was no significant training effect for caregiver strain. Observer-rated therapist delivery of evidence-based interventions strategies over 6 months mediated training effects for sense of competence at 6 months. Changes in sense of competence from baseline to 6 months was associated with reduced child challenging behaviors at 6 months and mediated child outcomes at 12 and 18 months.

Conclusion

Combined with research demonstrating effectiveness of therapist AIM HI training on child outcomes, this study provides further evidence of the positive impact of training community therapists in the AIM HI intervention.

MENTAL DISORDERS

Prevalence and Correlates of Mental Disorders in Children Aged 9 and 10 Years: Results From the ABCD Study

Mark Olfson · Melanie Wall · Shuai Wang, et. al

Abstract:

Objective

To estimate the prevalence of current DSM-5 disorders in children 9 to 10 years of age and their associations with sociodemographic and physical characteristics.

Method

In this analysis of Adolescent Brain Cognitive Development (ABCD) first wave study data, current child mental disorders were based on the computerized parent version of Schedule for Affective Disorders and Schizophrenia for School-Age Children (K-SADS) for DSM-5 (N = 11,874) supplemented with the child version of K-SADS for mood and selected anxiety disorders and with teacher Brief Problem Monitor ratings for the attention and externalizing scales. Child sociodemographic (race/ethnicity, nativity, parental marital status, parental education, family income) and physical (sex, pubertal stage, weight status, maternal age) characteristics were derived from parent report and anthropometric measurement. Odds ratio (OR) with 95% CI assessed associations with child mental disorders.

Results

The prevalence of any current mental disorder was 10.11%, including 11.48% among boys and 8.68% among girls. After controlling for several sociodemographic and physical characteristics, boys (OR = 1.53, 95% CI = 1.17-1.99), children from families with incomes below $25,000 (OR = 2.05, 95% CI = 1.31-3.22) and families with incomes of $25,000 to $49,000 (OR = 1.90, 95% CI = 1.20-3.00) (reference: $75,000), and obese children (OR = 1.45, 95% CI = 1.16-1.81) (reference: healthy weight) were at increased risk for any current child mental disorder. Children from the lowest family income group were at particularly high risk for attention-deficit/hyperactivity disorder (OR = 3.86, 95% CI = 1.69-8.79) and disruptive behavior disorders (OR = 4.13, 95% CI = 1.86-9.15).

Conclusion

These patterns underscore the importance of strengthening service planning, preventive interventions, and etiological research focused on children from low-income families.

3.79 General Population Longitudinal Studies of Mental Disorders in Children: A Systematic Review of Study Characteristics

Laura Duncan · Theodora Bogdan · Habeba Talaat, et. al

Abstract:

Objectives

Longitudinal studies of mental disorders in children examine risk factors, outcomes, and sequelae of disorder. They are resource intensive but allow for causal inferences and life-course perspectives. The objectives, methodology, and operational characteristics of general population longitudinal studies of mental disorders in

children are highly variable. Understanding the characteristics of existing studies is needed for deliberate and strategic planning of new longitudinal studies that

Methods

We conducted a literature review in MEDLINE, Embase, and PsycINFO for records reporting general-population longitudinal research about child mental disorder available in English. Records were grouped by study and assessed for eligibility. Data were extracted from a record reporting study methodology or child mental disorder prevalence, study website, or study user guide. We generated narrative and tabular syntheses of the nature, scope, features, and range of existing studies meeting our

Results

We identified 15,810 unique records representing 319 studies, of which 123 met our eligibility criteria. Studies were conducted from 1970 to 2016 in Asia, Europe, North America, and Oceania, with data collected from 1 to 68 time points, and 78% of the studies reported to be ongoing. Baseline sample sizes ranged from 606 to 17,000, with baseline response rates between 58.7% and 97% and a mean attrition of 41%. Most studies were conducted in the United States and at the city or town level.

Conclusions

These results advance our understanding of existing general population longitudinal studies of child mental disorder and inform the planning of future studies to address evidence gaps, encourage comprehensive reporting of study methodology, and promote study designs that facilitate generalizability, cross-study and cross-national comparisons, and inclusion in meta-analytic syntheses of longitudinal evidence.

Bumetanide for Core Symptoms of Autism Spectrum Disorder (BAMBI): A Single Center, Double-Blinded, Participant-Randomized, Placebo-Controlled, Phase-2 Superiority Trial

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Abstract:

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Method

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Conclusion

The trial outcome was negative in terms of no superior effect on the primary outcome. The secondary outcomes suggest efficacy on repetitive behavior symptoms for a subset of patients.

An Updated Systematic Review and Meta-regression Analysis: Mental Disorders Among Adolescents in Juvenile Detention and Correctional Facilities

Gabrielle Beaudry · Rongqin Yu · Niklas L?ngstr?m, et. al

Abstract:

Objective

To synthesize evidence on the prevalence of mental disorders in adolescents in juvenile detention and correctional facilities and examine sources of heterogeneity between studies.

Method

Electronic databases and relevant reference lists were searched to identify surveys published from January 1966 to October 2019 that reported on the prevalence of mental disorders in unselected populations of detained adolescents. Data on the prevalence of a range of mental disorders (psychotic illnesses, major depression, attention-deficit/hyperactivity disorder [ADHD], conduct disorder, and posttraumatic stress disorder [PTSD]) along with predetermined study characteristics were extracted from the eligible studies. Analyses were reported separately for male and female adolescents, and findings were synthesized using random-effects models. Potential sources of heterogeneity were examined by meta-regression and subgroup analyses.

Results

Forty-seven studies from 19 countries comprising 28,033 male and 4,754 female adolescents were identified. The mean age of adolescents assessed was 16 years (range, 10–19 years). In male adolescents, 2.7% (95% CI 2.0%–3.4%) had a diagnosis of psychotic illness; 10.1% (95% CI 8.1%–12.2%) major depression; 17.3% (95% CI 13.9%–20.7%) ADHD; 61.7% (95% CI 55.4%–67.9%) conduct disorder; and 8.6% (95% CI 6.4%–10.7%) PTSD. In female adolescents, 2.9% (95% CI 2.4%–3.5%) had a psychotic illness; 25.8% (95% CI 20.3%–31.3%) major depression; 17.5% (95% CI 12.1%–22.9%) ADHD; 59.0% (95% CI 44.9%–73.1%) conduct disorder; and 18.2% (95% CI 13.1%–23.2%) PTSD. Meta-regression found higher prevalences of ADHD and conduct disorder in investigations published after 2006. Female adolescents had higher prevalences of major depression and PTSD than male adolescents.

Conclusion

Consideration should be given to reviewing whether health care services in juvenile detention can address these levels of psychiatric morbidity.

ADOLESCENT (AGE GROUP)

How Much Is Too Much? Examining the Relationship Between Digital Screen Engagement and Psychosocial Functioning in a Confirmatory Cohort Study

Andrew K Przybylski · Amy Orben · Netta Weinstein, et. al

Abstract:

Objective

Previous studies have offered mixed results regarding the link between digital screen engagement and the psychosocial functioning of young people. In this study, we aimed to determine the magnitude of this relation, to inform the discussion regarding whether amount of digital screen time has a subjectively significant impact on the psychosocial functioning of children and adolescents.

Method

We analyzed data from primary caregivers participating in the National Survey of Children's Health (NSCH), an annual nationally representative survey fielded by the US Census Bureau between June 2016 and February 2017. NSCH uses an address-based sampling frame and both Web- and paper-based data collection instruments to measure psychosocial functioning and digital engagement, including a modified version of the Strengths and Difficulties questionnaire and caregiver estimates of daily television- and device-based engagement, respectively.

Results

The expected parabolic inverted-U-shaped relationship linking digital screen engagement to psychosocial functioning was found. These results replicated past

findings suggesting that moderate levels of screen time (1-2 hours a day) were associated with slightly higher levels of psychosocial functioning compared to lower or higher levels of engagement. Furthermore, it indicated that children and adolescents would require 4 hours 40 minutes of television-based engagement and 5 hours 8 minutes of daily device-based engagement before caregivers would be able to notice subjectively significant variations in psychosocial functioning.

Conclusion

The possible influence of digital screen engagement is likely smaller and more nuanced than we might expect. These findings do not rule out the possibility that parents might only notice very high levels of screen time when their child manifests pronounced psychosocial difficulties. Future work should be guided by transparent and confirmatory programs of research.

Sleep, Growth, and Puberty After Two Years of Prolonged-Release Melatonin in Children With Autism Spectrum Disorder

Beth A Malow · Robert L Findling · Carmen M Schroder, et. al

Abstract:

Objective

A recent 3-month double-blind, placebo-controlled study demonstrated efficacy and safety of pediatric prolonged-release melatonin (PedPRM) for insomnia in children with autism spectrum disorder. This study examined the long-term effects of PedPRM treatment on sleep, growth, body mass index, and pubertal development.

Method

Eighty children and adolescents (2–17.5 years of age; 96% with autism spectrum disorder) who completed the double-blind, placebo-controlled trial were given 2 mg, 5 mg, or 10 mg PedPRM nightly up to 104 weeks, followed by a 2-week placebo period to assess withdrawal effects.

Results

Improvements in child sleep disturbance and caregiver satisfaction with child sleep patterns, quality of sleep, and quality of life were maintained throughout the 104-week treatment period (p < .001 versus baseline for all). During the 2-week withdrawal placebo period, measures declined compared with the treatment period but were still improved compared with baseline. PedPRM was generally safe; the most frequent treatment-related adverse events were fatigue (6.3%), somnolence (6.3%), and mood swings (4.2%). Changes in mean weight, height, body mass index, and pubertal status (Tanner staging done by a physician) were within normal ranges for age with no evidence of delay in body mass index or pubertal development.

Conclusion

Nightly PedPRM at optimal dose (2, 5, or 10 mg nightly) is safe and effective for

long-term treatment in children and adolescents with autism spectrum disorder and insomnia. There were no observed detrimental effects on children's growth and pubertal development and no withdrawal or safety issues related to the use or discontinuation of the drug.

Systematic Review: Anxiety in Children and Adolescents With Chronic Medical Conditions

Vanessa E Cobham · Anna Hickling · Hayley Kimball, et. al

Abstract:

Objective

Youth with chronic medical conditions (CMCs) have been reported to be at increased risk for developing anxiety disorders. Importantly, suffering from anxiety may also have an impact on their disease-related outcomes. This study set out to systematically review the literature on anxiety and seven CMCs (asthma, congenital heart disease, diabetes, epilepsy, inflammatory bowel disease, juvenile idiopathic arthritis, and sickle cell disease) among youth.

Method

A systematic review was performed according to the PRISMA statement. Searches were conducted across PubMed, PsycNET, Embase, and reference lists of the included studies (1990–2018). Three independent reviewers screened titles and abstracts and conducted full-text assessment. Studies were included if they reported the prevalence of anxiety or the association of anxiety on disease-related outcomes in children and/or adolescents with the focal CMCs.

Results

A total of 53 studies met the predetermined inclusion criteria. Across the CMCs, the prevalence of anxiety disorder was increased in youths with CMCs compared to the general population. Evidence for a relationship between anxiety and adverse disease-related outcomes was limited. For asthma, inflammatory bowel disease, and sickle cell disease, there was some evidence indicating that anxiety was associated with adverse outcomes; supported by two longitudinal studies, one in asthma and one in inflammatory bowel disease. For diabetes, results were inconsistent; with some studies indicating that anxiety was associated with worse and others with better treatment adherence.

Conclusion

The prevalence of anxiety disorders in youth with CMCs is higher than that in the general population. Anxiety may also be associated with adverse disease-related outcomes for youths, but it is not possible to draw definitive conclusions. Longitudinal studies making use of parent/youth composite anxiety measures and a combination of parent/youth reported and objective measures of disease-related outcomes are needed.

Given the burden of disease of anxiety disorders, regardless of the impact on the disease outcomes, screening for and treatment of anxiety is recommended in youths with CMCs.

Identifying Adolescents at Risk for Depression: A Prediction Score Performance in Cohorts Based in 3 Different Continents

Thiago Botter-Maio Rocha · Helen L Fisher · Arthur Caye, et. al

Abstract

Objective

Prediction models have become frequent in the medical literature, but most published studies are conducted in a single setting. Heterogeneity between development and validation samples has been posited as a major obstacle for the generalization of models. We aimed to develop a multivariable prognostic model using sociodemographic variables easily obtainable from adolescents at age 15 to predict a depressive disorder diagnosis at age 18 and to evaluate its generalizability in 2 samples from diverse socioeconomic and cultural settings.

Method

Data from the 1993 Pelotas Birth Cohort were used to develop the prediction model, and its generalizability was evaluated in 2 representative cohort studies: the Environmental Risk (E-Risk) Longitudinal Twin Study and the Dunedin Multidisciplinary Health and Development Study.

Results

At age 15, 2,192 adolescents with no evidence of current or previous depression were included (44.6% male). The apparent C-statistic of the models derived in Pelotas ranged from 0.76 to 0.79, and the model obtained from a penalized logistic regression was selected for subsequent external evaluation. Major discrepancies between the samples were identified, impacting the external prognostic performance of the model (Dunedin and E-Risk C-statistics of 0.63 and 0.59, respectively). The implementation of recommended strategies to account for this heterogeneity among samples improved the model's calibration in both samples.

Conclusion

An adolescent depression risk score comprising easily obtainable predictors was developed with good prognostic performance in a Brazilian sample. Heterogeneity among settings was not trivial, but strategies to deal with sample diversity were identified as pivotal for providing better risk stratification across samples. Future efforts should focus on developing better methodological approaches for incorporating heterogeneity in prognostic research.

ATTENTION DEFICIT HYPERACTIVITY DISORDER

Combining multivariate genomic approaches to elucidate the comorbidity between autism spectrum disorder and attention deficit hyperactivity disorder

Hugo Peyre · Tabea Schoeler · Chaoyu Liu, et. al

Abstract

Background

Attention deficit hyperactivity disorder (ADHD) and autism spectrum disorder (ASD) are two highly heritable neurodevelopmental disorders. Several lines of evidence point towards the presence of shared genetic factors underlying ASD and ADHD. We conducted genomic analyses of common risk variants (i.e. single nucleotide polymorphisms, SNPs) shared by ASD and ADHD, and those specific to each disorder.

Methods

With the summary data from two GWAS, one on ASD (N = 46,350) and another on ADHD (N = 55,374) individuals, we used genomic structural equation modelling and colocalization analysis to identify SNPs shared by ASD and ADHD and SNPs specific to each disorder. Functional genomic analyses were then conducted on shared and specific common genetic variants. Finally, we performed a bidirectional Mendelian randomization analysis to test whether the shared genetic risk between ASD and ADHD was interpretable in terms of reciprocal relationships between ASD and ADHD.

Results

We found that 37.5% of the SNPs associated with ASD (at p < 1e-6) colocalized with ADHD SNPs and that 19.6% of the SNPs associated with ADHD colocalized with ASD SNPs. We identified genes mapped to SNPs that are specific to ASD or ADHD and that are shared by ASD and ADHD, including two novel genes INSM1 and PAX1. Our bidirectional Mendelian randomization analyses indicated that the risk of ASD was associated with an increased risk of ADHD and vice versa.

Conclusions

Using multivariate genomic analyses, the present study uncovers shared and specific genetic variants associated with ASD and ADHD. Further functional investigation of genes mapped to those shared variants may help identify pathophysiological pathways and new targets for treatment.

Systematic Review and Meta-analysis: The Prevalence of Mental Illness in Child and Adolescent Refugees and Asylum Seekers

Rebecca Blackmore · Kylie M. Gray · Jacqueline A, et. al

Abstract

Objective

Over half of the world's refugee population are under the age of 18 years. This systematic review aims to summarize the current body of evidence for the prevalence of mental illness in child and adolescent refugee populations.

Method

Eight electronic databases, gray literature, and Google Scholar were searched for articles from 1 January 2003 to 5 February 2018. Strict inclusion criteria regarding the diagnosis of mental illness were imposed. Study quality was assessed using a template according to study design, and study heterogeneity using the I2 statistic. Random effects meta-analyses results were presented given heterogeneity among studies. The protocol for this systematic review was registered with PROSPERO (CRD42016046349).

Results

Eight studies were eligible, involving 779 child and adolescent refugees and asylum seekers, with studies conducted in 5 countries. The overall prevalence of posttraumatic stress disorder (PTSD) was 22.71% (95% CI 12.79−32.64), depression 13.81% (95% CI 5.96−21.67), and anxiety disorders 15.77% (95% CI 8.04−23.50). Attention-deficit/hyperactivity disorder (ADHD) was 8.6% (1.08−16.12) and oppositional defiant disorder (ODD) was 1.69% (95% CI −0.78 to 4.16). Because of the high heterogeneity, further subgroup analyses were conducted.

Conclusion

Refugee and asylum seeker children have high rates of PTSD, depression, and anxiety. Without the serious commitment by health and resettlement services to provide early support to promote mental health, these findings suggest that a high proportion of refugee children are at risk for educational disadvantage and poor social integration in host communities, potentially affecting their life course.

Repetitive Behavior Severity as an Early Indicator of Risk for Elevated Anxiety Symptoms in Autism Spectrum Disorder

Danielle A Baribeau · Simone Vigod · Eleanor Pullenayegum, et. al

Abstract

Objective

A significant proportion of children with autism spectrum disorder (ASD) will develop an anxiety disorder during childhood. Restricted and repetitive behavior severity in ASD positively correlates with anxiety severity in cross-sectional surveys. The longitudinal relationship between restricted/repetitive behavior and future anxiety symptoms is unclear.

Method

In a longitudinal cohort of children with ASD (n = 421), restricted/repetitive behavior severity at enrollment (age 2−5 years) was categorized as "mild," "moderate," or "severe" using the Autism Diagnostic Interview−Revised. Elevated anxiety symptoms were defined by a Child Behavior Checklist (parent report) Anxiety subscale T-score of >65 at ages 8 to 11 years. Multivariable logistic regression with multiple imputation for missing data was used to examine the association between restricted/repetitive behavior severity and elevated anxiety symptoms while adjusting for age, sex, adaptive functioning, baseline anxiety, income, and parenting stress, generating adjusted odds ratios (aORs) and 95% CIs.

Results

Approximately 58% of children with severe restricted/repetitive behavior at enrollment had elevated anxiety symptoms by age 11, compared to 41% of those with moderate, and 20% of those with mild restricted/repetitive behavior, respectively. Moderate and severe restricted/repetitive behavior were both associated with increased odds of elevated anxiety (moderate aOR: 2.5 [1.2−5.3]; severe aOR: 3.2 (1.4−7.5]).

Conclusion

Restricted/repetitive behavior severity at time of ASD diagnosis indicates risk for future anxiety symptoms. This finding increases our understanding of which children with ASD will develop anxiety disorders and may guide research concerning early interventions and etiological mechanisms.

CHILDREN

Stepped Care Versus Standard Care for Children After Trauma: A Randomized Non-inferiority Clinical Trial

Alison Salloum · Yuanyuan Lu · Henian Chen, et. al

Abstract

Objective

Trauma-focused cognitive-behavioral therapy (TF-CBT) is an evidence-based therapist-led treatment for children after trauma. Parents often experience barriers to treatment engagement, including cost. Stepped care TF-CBT (SC-TF-CBT) was developed as an alternative delivery system. Step One is a parent-led therapist-assisted treatment. Step Two provides therapist-led TF-CBT for children who did not benefit from Step One and require more intensive treatment. This study compared SC-TF-CBT to standard TF-CBT in a community-based non-inferiority trial.

Method

A total of 183 children (aged 4-12 years) experiencing posttraumatic stress symptoms (PTSS) and their caregivers were randomly assigned to SC-TF-CBT or standard TF-CBT within 6 community clinics. Assessments occurred at baseline, mid- and

posttreatment, and 6 and 12 months. Primary outcomes included PTSS and impairment. Secondary outcomes included severity, diagnostic status, remission, and response. Treatment cost, acceptability, and satisfaction were measured. Difference and non-inferiority tests were applied.

Results

SC-TF-CBT participants changed at rates comparable to participants in TF-CBT for primary and secondary measures. SC-TF-CBT was non-inferior to TF-CBT for PTSS, impairment, and severity at all time points except for impairment at the 6-month assessment. Attrition did not differ between treatment arms (132 participants were completers). Baseline treatment acceptability was lower for SC-TF-CBT parents, although there was no difference in expected treatment improvements or treatment satisfaction at posttreatment. Based on regression estimates, total costs were 38.4% lower for SC-TF-CBT compared to TF-CBT, whereas recurring costs were 53.7% lower.

Conclusion

Stepped Care TF-CBT provides an alternative way to deliver treatment for some children and parents, with reduced cost for providers and parents.

Clinical Practice Guideline for the Assessment and Treatment of Children and Adolescents With Major and Persistent Depressive Disorders

Heather J. Walter · A. Reese Abright · Oscar G. Bukstein, et. al

Abstract:

Objective

To enhance the quality of care and clinical outcomes for children and adolescents with major depressive disorder (MDD) and persistent depressive disorder (PDD). The aims are as follows: (1) to summarize empirically based guidance about the psychosocial and psychopharmacologic treatment of MDD and PDD in children and adolescents; and (2) to summarize expert-based guidance about the assessment of these disorders as an integral part of treatment, and the implementation of empirically based treatments for these disorders in clinical practice.

Method

Statements about the treatment of MDD and PDD are based upon empirical evidence derived from a critical systematic review of the scientific literature conducted by the Research Triangle Institute International–University of North Carolina at Chapel Hill (RTI-UNC) Evidence-based Practice Center under contract with the Agency for Healthcare Research and Quality (AHRQ). Evidence from meta-analyses published since the AHRQ/RTI-UNC review is also presented to support or refute the AHRQ findings. Guidance about the assessment and clinical implementation of treatments for MDD and PDD is informed by expert opinion and consensus as presented in previously published clinical practice guidelines, chapters in leading textbooks of child and

adolescent psychiatry, the DSM-5-TR, and government-affiliated prescription drug information websites.

Results

Psychotherapy (specifically, cognitive−behavioral and interpersonal therapies) and selective serotonin reuptake inhibitor (SSRI) medication have some rigorous (randomized controlled trials, meta-analyses) empirical support as treatment options. Because effective treatment outcomes are predicated in part upon accuracy of the diagnosis, depth of the clinical formulation, and breadth of the treatment plan, comprehensive, evidence-based assessment may enhance evidence-based treatment outcomes.

Conclusion

Disproportionate to the magnitude of the problem, there are significant limitations in the quality and quantity of rigorous empirical support for the etiology, assessment, and treatment of depression in children and adolescents. In the context of a protracted severe shortage of child and adolescent−trained behavioral health specialists, the demonstration of convenient, efficient, cost-effective, and user-friendly delivery mechanisms for safe and effective treatment of MDD and PDD is a key research need. Other research priorities include the sequencing and comparative effectiveness of depression treatments, delineation of treatment mediators and moderators, effective approaches to treatment nonresponders and disorder relapse/recurrence, long-term effects and degree of suicide risk with SSRI use, and the discovery of novel pharmacologic or interventional treatments.

A Randomized Trial of Direct Instruction Language for Learning in Children With Autism Spectrum Disorder

Lawrence Scahill · M Alice Shillingsburg · Opal Ousley, et. al

Abstract:

Objective

To compare Direct Instruction Language for Learning (DI) plus treatment as usual (TAU) with TAU alone in children with autism spectrum disorder and moderate language delay.

Method

In this study, 83 children (age range, 4 years to 7 years 11 months) were randomly assigned to DI+TAU (n = 42) or TAU (n = 41) for 6 months. Trained therapists delivered DI in twice-weekly, 90-minute sessions for 24 weeks. The primary outcome was the standard score on the age-appropriate version of the Clinical Evaluation of Language Fundamentals (CELF). The key secondary measure was the proportion of children rated by a clinician blinded to treatment as "much improved" or "very much improved" on the Clinical Global Impressions–Improvement (CGI-I) scale.

Results

Attrition was 12%. At end point, DI+TAU participants showed a 4.8-point (8.1%) increase on CELF vs 2.3 points (4.1%) in TAU participants (difference = 2.55, p = .14, effect size = 0.25), rendering this a negative trial on the prespecified primary outcome. In post hoc analysis that adjusted for IQ, mean difference was 3.5 (p = .04, effect size = 0.33). On CGI-I, 54.8% (23/42) of DI+TAU participants were rated much improved or very much improved compared with 21.9% (9/41) of TAU participants ($\chi2$ = 9.4, p = .002). On the clinically meaningful threshold of >5 points on CELF, 55.5% of DI+TAU participants achieved this benchmark vs 29.3% of TAU participants ($\chi2$ = 3.6, p = .06). Complete CELF data were available for 72 participants. In the combined sample, baseline CELF scores ≤50 were associated with no improvement.

Conclusion

On CELF, DI+TAU did not meet the prespecified difference from TAU. When adjusted for IQ, DI+TAU was superior to TAU on CELF at end point. DI+TAU was superior to TAU on CGI-I.

Variation in sleep profiles in children with ADHD and associated clinical characteristics

Emma Sciberras · Harriet Hiscock · Samuele Cortese, et. al

Abstract:

Background

Sleep difficulties are common in children with attention-deficit/hyperactivity disorder (ADHD). However, sleep problems are multifaceted and little is known about the variation in sleep difficulties across children with ADHD. We examined the profiles of sleep difficulties in children with ADHD and associated clinical factors (e.g. co-occurring mental health conditions, stimulant use and parent mental health).

Methods

Data from two harmonised studies of children with ADHD (total: N = 392, ages 5–13 years) were used. Parents completed measures of children's sleep, co-occurring mental health conditions and their own mental health. Both parents and teachers completed measures of child ADHD symptoms and emotional and conduct symptoms. Latent profile analysis was used to identify sleep profiles, and multinomial logistic regression assessed clinical correlates of the groups.

Results

Five sleep profiles were identified: (a) insomnia/delayed sleep phase (36%), (b) generalised sleep difficulties at sleep onset and overnight (25%), (c) high anxious/bedtime resistance difficulties (11%), (d) overnight sleep difficulties including obstructive sleep apnoea and parasomnias (5%) and (e) no sleep difficulties (22%). Compared with the group without sleep difficulties, the generalised, anxious/bedtime resistance and insomnia/delayed sleep phase sleep had greater parent-reported emotional and conduct symptoms, co-occurring anxiety and increased parent mental

health difficulties. The generalised and anxious/bedtime resistance groups also had greater parent-reported ADHD symptoms, with the anxious/bedtime resistance sleep group also having more frequent co-occurring depression and teacher-reported emotional symptoms.

Conclusions

The sleep difficulties experienced by children with ADHD are varied. Supports to help children with ADHD need to consider the particular profiles of sleep difficulties experienced and broader clinical characteristics. Tailored intervention approaches are likely needed (including a need to address parent mental health).

Ⅱ Concentration

P HYSICS

3D Printed Nitrogen‑Doped Thick Carbon Architectures for Supercapacitor: Ink Rheology and Electrochemical Performance

Guoqiang Zhou • Mei‑Chun Li • Chaozheng Liu, et al.

Abstract

The 3D printing technique offers huge opportunities for customized thick-electrode designs with high loading densities to enhance the area capacity in a limited space. However, key challenges remain in formulating 3D printable inks with exceptional rheological performance and facilitating electronic/ion transport in thick bulk electrodes. Herein, a hybrid ink consisting of woody-derived cellulose nanofibers (CNFs), multiwalled carbon nanotubes (MWCNTs), and urea is formulated for the 3D printing nitrogen-doped thick electrodes, in which CNFs serve as both dispersing and thickening agents for MWCNTs, whereas urea acts as a doping agent. By systematically tailoring the concentration-dependent rheological performance and 3D printing process of the ink, a variety of gel architectures with high geometric accuracy and superior shape fidelity are successfully printed. The as-printed gel architecture is then transformed into a nitrogen-doped carbon block with a hierarchical porous structure and superior electrochemical performance after freeze-drying and annealing treatments. Furthermore, a quasi-solid-state symmetric supercapacitor assembled with two interdigitated carbon blocks obtained by a 3D printing technique combined with a nitrogen-doping strategy delivers an energy density of 0.10 mWh cm−2 at 0.56 mW cm−2. This work provides guidance for the formulation of the printable ink used for 3D printing of high-performance thick carbon electrodes.

An efficient and non‑intrusive approach for robust design optimization with the first‑order second‑moment method

Jan Christoph Krüger · Micah Kranz · Timo Schmidt, et al.

Abstract

A modified robust design optimization approach is presented, which uses the first-order second-moment method to compute the mean value and the standard deviation for arbitrary objective functions. Existing approaches compute the gradient of the variance using the adjoint method, direct differentiation or finite differences, respectively. These approaches either access to the FE-code and/or have high computational cost. In this

paper, a new approach for the computation of the gradient of the variance is provided. It can be easily implemented as a non-intrusive method, which behaves similar to finite differences with the cost of only one additional objective evaluation, independent of the number of variables. Here, a step-size has to be chosen carefully and therefore, a procedure to determine a problem-independent step-size is provided. As an alternative, the approach can be implemented as an analytic method with the same cost like the adjoint method, but providing wider applicability (e.g. eigenvalue problems). The provided approach is derived, analyzed and applied to several benchmark examples.

Three-field partitioned analysis of fluid–structure interaction problems with a consistent interface model

José A. González · K.C. Park.

Abstract

This paper proposes a new Fluid–Structure Interaction computational framework. The coupling between the solid and an incompressible fluid is formulated by means of the method of localized Lagrange multipliers (LLM). Instead of applying a direct coupling between the fluid and the structure, which is the traditional approach, LLM introduces an intermediate surface with its own degrees of freedom that is connected to the fluid and structure sides using independent fields of localized Lagrange multipliers. This approach allows the connection of non-matching meshes with mortar or classical localized methods and provides consistent dynamic equations of motion for the interface that can be integrated in parallel. Interface multipliers are later eliminated and the interface motion is used to update the fluid and structure states. This way, dedicated stand-alone software modules for the fluid and the structure are connected to a third interface system treating their interaction, thus preserving the modularity of the single-discipline software modules. Different numerical examples are solved with the proposed methodology to prove its efficiency and accuracy by running a series of classical dynamic FSI benchmark problems.

MATERIALS

Cyclic plasticity of additively manufactured Ti-6Al-4V bracket for aeroengine application

Ming Li · Alok Gupta · Chris J, et al.

Abstract
This work aims to establish the mechanical relationship between additive manufactured

Titanium alloy and geometrically complex load-bearing aeroengine lightweight structure under cyclic loading. To achieve this, the constitutive behavior of Laser Powder Bed Fusion (LPBF) Ti-6Al-4V was characterized through a computational cyclic plasticity model derived based on the uniaxial strain-range controlled low cycle fatigue (LCF) test. An idealised three-dimensional (3D) finite element (FE) model was developed and experimentally validated to investigate the remote response and localised stress-strain nature in the bracket elements for risk evaluation and structural optimization. The predicted results indicated that the dominant cracking mode of the bracket under LCF test, was more dependent on the localised maximum principal stress rather than von Mises equivalent stress. Furthermore, the first failed region exhibited an opening crack (Mode-I failure), while the second and third failed regions showed a mixture of opening and shear crack (Mode-I and Mode-II failure). The microscopic observation further revealed that the three failed regions exhibited a ductile type of fracture at the cracking initiation and final fracture regions, and a brittle fracture at the propagation region.

Unraveling the superlattice effect for hexagonal transition metal diboride coatings

R. Hahn · A.A. Tymoszuk · T. Wojcik, et al.

Abstract

Superlattice structures enable the simultaneous enhancement in hardness (H) and fracture toughness (KIC) of ceramic-like coatings. While a deeper understanding of this effect has been gained for fcc-structured transition metal nitrides (TMN), hardly any knowledge is available for hexagonal diborides (TMB2). Here we show that superlattices can—similarly to nitrides—increase the hardness and toughness of diboride films. For this purpose, we deposited TiB2/WB2 and TiB2/ZrB2 superlattices with different bilayer periods (Λ) by non-reactive sputtering. Nanoindentation and in-situ microcantilever bending tests yield a distinct H peak for the TiB2/WB2 system (45.5 ± 1.3 GPa for $\Lambda = 6$ nm) but no increase in KIC related to a difference in shear moduli (112 GPa). Contrary, the TiB2/ZrB2 system shows no peak in H, but for KIC with 3.70 ± 0.26 MPa·m1/2 at $\Lambda = 4$ nm originating from differences in lattice spacing (0.14 Å), hence causing coherent stresses retarding crack growth.

Optimization of high ionic conducting Br-rich and metal (Sb and Zr) substituted Li-argyrodite and their enhanced air stability and compatibility in lithium batteries

Yuvaraj Subramanian · Rajesh Rajagopal · Sung Kang, et al.

Abstract

Sulfide solid electrolyte has attracted much interest in the field of lithium solid-state batteries due to its high ionic conducting nature and good compatibility with lithium metal. However, improving the ionic conductivity, air stability, and electrochemical compatibility of sulfide solid electrolytes remains elusive. In this work, the Li-argyrodite system was optimized through halogen (Br) and metal (Sn and Zr) substitution using a high-energy ball milling process followed by heat treatment. The ionic conductivity analysis revealed that the optimized composition of Li5.3PS4.3Cl1.0Br0.7 solid electrolyte demonstrates an ionic conductivity of 16.6 mS cm−1 at 30 °C, which was ∼3 fold higher than that of Li6PS5Cl electrolyte. The metal substitution in the optimized composition slightly reduced the ionic conductivity, but increased the air stability and lithium compatibility. The optimized Sb- substituted electrolyte utilized in the Li-battery delivered a high discharge capacity of 72 mAh g−1 at 1 C rate than other electrolytes.

CHEMISTRY

Study on the initial pyrolysis kinetics of strained polycyclic hydrocarbons

Siyu Chen · Juanqin Li · Quan Zhu, et al.

Abstract

Strained polycyclic hydrocarbons are one of the most important classes of high-energy density fuels. In this work, the thermodynamics and initial pyrolysis kinetics of five strained polycyclic hydrocarbons, which are isomers of JP-10 and are linearly aggregates of two cyclopropyl rings and one cyclobutyl ring, were investigated using quantum chemical computations. The initial pyrolysis reactions include ring bond breaking and bridge bond breaking. The ring bond breaking reactions include a diradical pathway which is the direct C-C bond breaking to produce a diradical and an isomerization pathway involving concert bond breaking and H-atom transfer, and the bridge bond breaking reactions lead to two radicals. Our potential energy calculation shows that the ring bond breaking reactions are much more energetically favorable than the bridge bond breaking reactions, which can be neglected in the initial pyrolysis process of strained polycyclic hydrocarbons. The rate constants of the ring bond breaking reactions were computed using variational transition state theory (VTST) or transition state theory (TST). Our calculated results demonstrated that ring bond breaking reactions of the three-membered ring are competitive with that of the four-membered ring. The studied reactions are divided into classes depending on the size of the rings (three- or four-membered ring) and the types of the carbon atoms of the breaking C-C bond (Cs-Cs, Cs-Ct, Ct-Ct and Cq-Cs). Reaction rate rules are established for each class, which are useful for the mechanism generation for analogous strained

polycyclic hydrocarbons. Thermodynamic properties including net calorific values per mole, gravimetric net heat of combustion and impulse time of our studied strained polycyclic hydrocarbons are higher than those of JP-10. A comparison of the initial pyrolysis kinetics of our studied strained polycyclic hydrocarbons with the isomer JP-10 indicates that these compounds may be easier to pyrolyze.

A kinetic modeling study on the effect of alkylbenzenes structure on PAH formation at elevated pressures

Zekang Lyu · Jizhen Zhu · Yong Qian, et al.

Abstract

Alkylbenzene is one of the significant components of practical transport fuel, which is considered as the main reason leading to serious emissions of polycyclic aromatic hydrocarbon (PAH) from combustion processes. This work reports a kinetic modeling study on the impact of alkylbenzenes structure, i.e., the length and number of the alkyl side chain, on PAH formation at elevated pressures. A detailed kinetic model has been established and a large number of reactions concerning the PAH species formation have been updated according to the latest theoretical studies. The model is then verified by the previous experimental data containing the concentration profiles of PAH species. The fuel decomposition reactivity and the mole fraction curves of monocyclic aromatic hydrocarbon and polycyclic aromatic hydrocarbon can be well predicted by the present model. The kinetic analysis indicates that the dominant formation pathways of PAHs are barely influenced by the alkyl side chain length, especially at the high-temperature window. In the A1_C1-C4 linear alkylbenzenes pyrolysis system, the formation of benzene is mainly affected by the competition between the combination reaction of C_5H_3 with CH_3 and the ipso-substitution reaction of $A1CH_3$ by H. Unlike the A1_C1-C4 linear alkylbenzenes pyrolysis chemistry, fuel-related reactions associated with the formation of PAHs become more usual as the number of alkyl side chain increases, such as the formation pathway of C9 species in the pyrolysis chemistry of o-xylene and the formation pathway of phenanthrene in the oxidation chemistry of 1,3,5-trimethylbenzene.

Pilot test of high-pressure water jet slotting with liquid CO2 injection to displace CH4 and improve coal seam permeability

Wansheng Mi · Hu Wen · Shixing Fan, et al.

Abstract

High-gas and low-permeability coal seams commonly exist in China; however, there is still a gap between gas drainage volume and planned production. Hydraulicization and CO2 injection displacement of CH4 are technologies that unilaterally improve the

safety and efficiency of coal seam gas extraction. This study combines the high-pressure water jet slotting technology in boreholes with the liquid CO2 injection technology to displace coal seam CH4. Field experiments were conducted on the 401,102 working face of the Mengcun Coal Mine and the experimental results were compared with the original boreholes. The results indicate that, based on the time and cumulative volume of slag return from single blade slotting in boreholes, the optimal slotting pressure and slotting time are 90 MPa and 18 min, respectively. The average coal seam CO2 content in test area I, which adopted the combined technology, was 1.8–3.37 times higher than that in test area II, which adopted common drilling and CO2 injection; the influence radius of CO2 is 1.44–1.6 times higher. The average concentration of CH4 in boreholes in test area I increased by 1.06–4.76 times in relation to that in test area II, the pure extraction volume of CH4 in boreholes increased by 0.6–12 times, and the impact period of liquid CO2 injection was extended by 36.33 %. Therefore, this pilot experiment provides theoretical support and reference basis for the application and promotion of combined technologies.

BIOLOGY

The physical and structural properties of acid–Ca2+ induced casein–alginate/Ca2+ double network gels

Jing Wang · Zuguo Chen · Weibo Zhang, et al.

Abstract

The design of protein or polysaccharide interpenetrating network gels according to their physicochemical properties is required to obtain the desired properties of hydrogels. In this study, a method was proposed to prepare casein–calcium alginate (CN–Alg/Ca2+) interpenetrating double-network gels by the release of calcium from a calcium retarder during acidification to form calcium–alginate (Alg/Ca2+) gel and casein (CN) acid gel. Compared with the casein–sodium alginate (CN–Alg) composite gel, the CN–Alg/Ca2+ dual gel network with an interpenetrating network gel structure has better water-holding capacity (WHC) and hardness. The rheology and microstructure results showed that the dual-network gels of CN and Alg/Ca2+ induced by gluconic acid–δ-sodium (GDL) and calcium ions were the network structure of the Alg/Ca2+ gel, which was the "first network", and the CN gel, which was the "second network". It was proven that the microstructure, texture characteristics, and WHC of the double-network gels could be regulated by changing the concentration of Alg in the double-network gels and that the 0.3 % CN–Alg/Ca2+ double gels showed the highest WHC and firmness values. The aim of this study was to provide useful information for the preparation of polysaccharide–protein mixed gels in the food industry or other fields.

Effect of soy protein isolate nanoparticles loaded with litsea cubeba essential oil on performance of lentinan edible films

Haiying Cui · Rui Xu · Wei Hu · Changzhu Li, et al.

Abstract

Environmental issues caused by plastic packaging materials have gotten increasingly severe, and substantial research has been conducted on environmentally friendly active packaging materials. In this study, the Litsea cubeba essential oil loaded soy protein isolate nanoparticles (LSNPs) with appropriate particle size, high storage stability and salt solution stability were fabricated. The LSNPs with the highest encapsulation efficiency of 81.76 % were added into the lentinan edible film. The microstructures of the films were observed by scanning electron microscopy. The physical properties of the films were measured. The results show that the lentinan film with LSNPs in the volume ratio of 4:1 (LF-4) had the highest elongation at break of 196 %, the lowest oxygen permeability of 12 meq/kg, and good tensile strength, water vapor barrier property, antibacterial property, oxidation resistance and thermal stability. The study suggested that LF-4 film could inhibit the growth of bacteria and delay the oxidation of lipid and protein on beef surface for 7 d.

Progress in the understanding of WRKY transcription factors in woody plants

Lianxiang Long · Lijiao Gu · Shijie Wang, et al.

Abstract

The WRKY transcription factor (TF) family, named for its iconic WRKY domain, is among the largest and most functionally diverse TF families in higher plants. WRKY TFs typically interact with the W-box of the target gene promoter to activate or inhibit the expression of downstream genes; these TFs are involved in the regulation of various physiological responses. Analyses of WRKY TFs in numerous woody plant species have revealed that WRKY family members are broadly involved in plant growth and development, as well as responses to biotic and abiotic stresses. Here, we review the origin, distribution, structure, and classification of WRKY TFs, along with their mechanisms of action, the regulatory networks in which they are involved, and their biological functions in woody plants. We consider methods currently used to investigate WRKY TFs in woody plants, discuss outstanding problems, and propose several new research directions. Our objective is to understand the current progress in this field and provide new perspectives to accelerate the pace of research that enable greater exploration of the biological functions of WRKY TFs.

DECA 2023

Submission deadline:	**SEP 22-24, 2023**
Conference date:	**SEP 12, 2023**
Full name:	**The 3rd International Conference on Digital Economy and Computer Application**
Location:	**Shanghai, China**
Website:	http://www.icdeca.com/

The 3rd International Conference on Digital Economy and Computer Applications (DECA 2023) will be held on September 22-24, 2023 in Shanghai, China. Digital economy is the main economic form after agricultural economy and industrial economy. It takes data resources as the key element, modern information network as the main carrier, and the integration and application of information and communication technology and all-factor digital transformation as the important driving force to promote a new economic form that is more unified in fairness and efficiency. The essence of digital economy is informationization. Informatization is a social and economic process caused by the revolution of production tools, such as computer and Internet, from industrial economy to information economy. The theme of the conference mainly focuses on digital economy and computer applications and other related research fields, aiming to provide an international cooperation and exchange platform for experts and scholars in related research fields and enterprise development personnel to share research results, discuss existing problems and challenges, and explore cutting-edge technologies. We sincerely invite experts and scholars from universities and research institutions at home and abroad, entrepreneurs and other relevant personnel to contribute and participate in the conference.

The DECA 2023 is accepting papers for proceeding publication. We accept contributions from those who care about exploring and enhancing the research and innovation in Digital Economy and Computer Applications in the world. The directions of the call for papers are as follows: Internet of Things (IoT), Blockchain Technology, Service-Oriented and Cloud, Industry Track, Deliver the Intelligent Enterprise, Mobile business and Autonomous Computing and other papers in line with the direction of digital economy and computer applications. We welcome submissions from scholars, students, and practitioners across many disciplines that contribute to the study and practice of Digital Economy and Computer Applications.

Topics

Internet of Things (IoT)

- Edging/Cloud Computing for Smart IoT
- Legal perspectives in IoT-based business service

- Auto-organization on context, exchange or supply chain
- IoS (Internet of Services) plus IoT
- Smart cities and internet of vehicles
- New business models and value map
- Architectures and platforms of IoT applications
- Machine learning and Evolutionary Computing for IoT applications
- Smart manufacturing and Industrial IoT
- Control and decision making for smart IoT
- Security and privacy for smart IoT

Blockchain Technology

- Anonymity and Criminal Activities of the Cryptocurrency
- Application of digital currency
- Applications and services based on blockchain
- Blockchain + electronic contract
- Blockchain and Cryptocurrency
- Blockchain and new economy and new finance
- Blockchain in crowdsourcing and crowdsensing
- Blockchain in social networking
- Blockchain in supply chain management
- Blockchain in the Internet of things (IoT)
- Blockchain investment
- Blockchain technology and industry supervision
- Blockchain, big data and AI
- Business value of blockchain
- Digital Wallets, Coin Exchange, and Initial Coin Offering
- Distributed Trust
- Managing the Risks of Cryptocurrency
- Protocols and algorithms based on blockchain
- Regulation and Policy in Cryptocurrency
- Security, Privacy, Attacks, and Forensics
- Smart contract and chain code
- Stablecoins and Monetary Policy
- Theories of blockchain and distributed ledger technology
- Transaction Monitoring and Analysis

Service-Oriented and Cloud

- Service QoS optimization
- Multi-tenancy, security and privacy in clouds
- Infrastructure as a Service, Platform as a Service, Application as a Service
- Service process modeling
- Business intelligence and analytics for servicesService security

- Service requirement collection, specification, and analysis
- Data- and computation-intensive services
- Extreme scalability, high availability, elasticity, and reliability in a cloud
- Programming models and transaction models for the cloud
- Cloud business support services and operational support

ICPRSS 2023

Submission deadline: **AUG 15, 2023**
Conference date: **SEP 15- 17, 2023**
Full name: **2023 3rd International Conference on Public Relations and Social Sciences**
Location: **Xi'an, China**
Website: icprss.org

ICPRSS started in 2021, and all papers accepted in the last session of ICPRSS have been successfully published.

Public relations refers to a series of public activities for an organization to improve the relationship with the public, promote the public's understanding, understanding and support of the organization, and achieve the purpose of establishing a good organizational image and promoting commodity sales. Its original intention is that social organizations, collectives or individuals must establish good relations with various internal and external publics around them. It is a state in which any enterprise or individual is in a state of public relations.

New features of public relations development: hierarchical public relations education, modernization of public relations means, integration of public relations theory, strategic public relations status, and specialization of public relations practice. And some of the global problems facing all mankind. It must be solved through international communication and dialogue, through global and cross-cultural communication to form a consensus, formulate international standards, and cooperate with all human beings to solve it.

Therefore, it is necessary to create a space for practitioners, engineering practitioners, researchers and related enthusiasts to gather and discuss this current issue.

The 2nd International Conference on Public Relations and Social Sciences (ICPRSS 2022) aims to accommodate this need, as well as to:

1. provide a platform for experts and scholars, engineers and technicians in the field of Public Relations and Social Sciences to share scientific research achievements and cutting-edge technologies

2. understand academic development trends, broaden research ideas, strengthen academic research and discussion, and promote the industrialization cooperation of academic achievements

3. Promote the institutionalization and standardization of Public Relations and Social Sciences through modern research

The conference will focus on Public Relations and Social Sciences. 2023 3rd International Conference on Public Relations and Social Sciences（ICPRSS 2023） welcomes papers dealing with Social Media, Public Relations Writing, Crisis Public Relations, Brand Communication, etc.

2023 3rd International Conference on Public Relations and Social Sciences（ICPRSS 2023） will be held in Xi'an, China on September 15-17, 2023. The conference sincerely invites experts, scholars, business people and other relevant personnel from domestic and foreign universities, research institutions to participate in the exchange.

Topics of interest for submission include, but are not limited to:

- Social Media
- PR psychology
- Public Relations Writing
- Crisis Public Relations
- Public Relations Practice
- Brand Communication
- Business Communication
- Integrated Marketing Communication
- Other related topics are welcome
- Law

MMET2023

Submission deadline:	**SEP 18, 2023**
Conference date:	**SEP 22-24, 2023**
Full name:	**2023 8th International Conference on Modern Management and Education Technology**
Location:	**Shinghai, China**
Website:	http://www.mmetss.org/

As a leading role in the global megatrend of scientific innovation, China has been creating a more and more open environment for scientific innovation, increasing the depth and breadth of academic cooperation, and building a community of innovation that benefits all. Such endeavors are making new contributions to the globalization and creating a community of shared future.

To adapt to this changing world and China's fast development in the new era, 2023 8th International Conference on Modern Management and Education Technology (MMET 2023) to be held inSeptember 22-24, 2023. This conference takes "bringing together global wisdom in scientific innovation to promote high-quality development" as the theme and focuses on cutting-edge research fields including Modern Management and Education Technology. MMET 2023 encourages the exchange of information at the forefront of research in different fields, connects the most advanced academic resources in China and the world, transforms research results into industrial solutions, and brings together talent, technology and capital to drive development. The conference sincerely invites experts, scholars, business people and other relevant personnel from universities, scientific research institutions at home and abroad to attend and exchange!

The topics of interest for submission include, but are not limited to:

- Education Science
- Management Science
- Culture
- Psychology
- Sports
- Law

AMCE 2023

Submission deadline:	**AUG 7, 2023**
Conference date:	**Oct 20, 2023 - Oct 22, 2023**
Full name:	**2023 International Conference on Advanced Materials and Chemical Engineering**
Location:	**Changsha, China**
Website:	http://www.icamce.org/

2023 3rd International Conference on Advanced Materials and Chemical Engineering (AMCE 2023) will be held on October 20 - 22, 2023 in Changsha, China.

AMCE 2023 is to bring together innovative academics and industrial experts in the field of Advanced Materials and Chemical Engineering to a common forum. The primary goal of the conference is to promote research and developmental activities in Advanced Materials and Chemical Engineering and another goal is to promote scientific information interchange between researchers, developers, engineers, students, and practitioners working all around the world. The conference will be held every year to make it an ideal platform for people to share views and experiences in Mechanical Engineering, Intelligent Manufacturing and related areas.

The topics of interest for submission include, but are not limited to:

New Materials

- Nano Materials and Technology,
- Magnetic Materials
- New Building Materials
- Superconducting Materials
- New Semiconductor Materials
- A New Generation of Amorphous Materials
- Nano Powder Materials
- Graphene
- Superconducting Materials and Raw Materials
- Biological Materials and Products
- Smart Materials Wait

Material physical chemistry

- Dielectric Superlattice and its Microstructure Materials and Devices
- Dielectric, Ferroelectric thin Films and Integrated Devices
- Artificial Band Gap Materials
- All-oxide Heterostructures and Devices
- Nanomaterials and Nanoelectronics
- New Functions Inorganic non-metallic Materials, Microstructure Material Design

- High-performance Computing in Material Design
- Nonlinear Photonics
- Controlled Synthesis and Assembly of Low-dimensional Nanomaterials
- Bio-nanomaterials and Biomedical Materials
- Nanophotonics Materials, etc.
- Colloid and Interface Chemistry
- Electrochemistry and Biosensors
- Data Physical Chemistry
- Nanotechnology, etc.